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ABSTRACT

Presented is a curriculum assessment and bibliography which identifies energy education materials useful to elementary and secondary teachers. Materials described are indexed by grade level and grouped according to whether they are: (1) activities, (2) background materials, or (3) teacher reference materials. In addition to the standard bibliographic information, each annotation lists subject areas, energy topics, types of activities, approach, student outcomes, assumed teacher background, and general evaluative comments. (NB)

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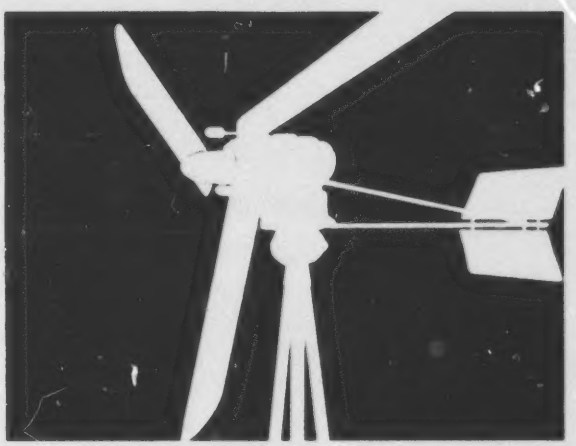

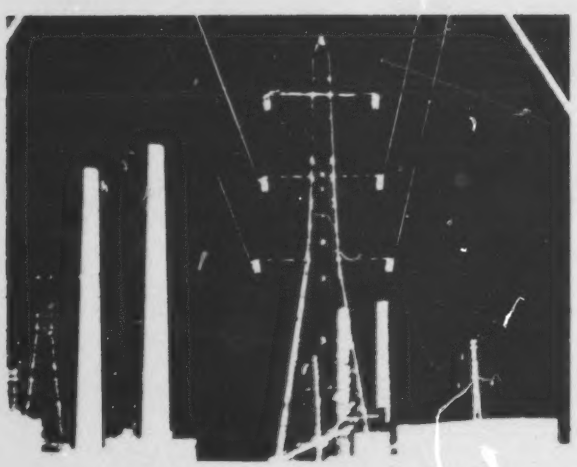

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ENERGY EDUCATION MATERIALS BIBLIOGRAPHY

SECOND EDITION

December 1980

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TABLE OF CONTENTS

Introduction 1

Criteria for Reviewing Energy Materials 3

Activities

- Activities Grade Level Index 7
- Annotated Activities Entries 10

Background Materials

- Background Materials Grade Level Index 65
- Annotated Background Materials Entries 67

Teacher Reference Materials

- Teacher Reference Index 105
- Annotated Teacher Reference Entries 106

Alphabetical Index 112

INTRODUCTION

The Minnesota Energy Agency has prepared this curriculum assessment and bibliography to identify energy education materials available to elementary and secondary teachers. The materials included in this guide have been reviewed by an educator and selected for inclusion on the basis of their educational merit and their usefulness to teachers and students. This revised and updated edition replaces the 1978 *Energy Education Materials Bibliography* and its 1979 *Update*. These bibliographies are distributed to all elementary and secondary schools in the state.

The objectives of the 1980 curriculum materials assessment project were to locate and evaluate recently available energy education materials and to review the existing *Energy Education Materials Bibliography* and its *Update* for current accuracy. Materials reviewed included books and media packages from educational publishers, school districts nationwide, and state and federal agencies. In compiling this collection of materials, an effort was made to establish a balance between background and activity materials, and among grade levels, subject areas, and energy topics. Special considerations were given to unique media types and free and inexpensive materials.

What is energy education?

Energy issues challenge our economy, our social structure, our technology, and our basic values. Today's students will have to deal with energy-related issues as individuals, consumers, and members of their communities throughout their lifetimes. Our schools can help prepare students by giving them the background they will need to deal effectively with the energy challenge.

Energy education examines the nature and sources of energy as well as the scientific, technical, political, economic, and social implications of energy use. It develops skills needed to understand, evaluate, and cope with energy issues. Just as there are many aspects to the energy situation, there are many ways of teaching students about energy. Energy concepts can be integrated into existing curriculum in related areas; it does not have to be a new subject area. This bibliography identifies a wide range of materials available to teachers and students interested in incorporating energy issues into their curriculum.

Bibliography Format

The **Activities** section reviews materials specifically designated for classroom use that identify appropriate learning activities, such as classroom discussions and projects, experiments, problem solving or field trips. **Background** materials are those that generally do not proscribe specific activities, but which can be used by students and teachers to provide additional information in conjunction with other energy education activities. **References** are bibliographies, glossaries, and newsletters that can provide teachers with additional information on energy and energy education.

Each item was evaluated for content, subject areas, grade levels, points of emphasis, and teacher background necessary. In general, the suggested subject areas should not be taken as too restrictive, for many of the materials can be used on an interdisciplinary basis. Some of the criteria used while reviewing the materials have been noted on the page titled "Criteria for Reviewing Energy Materials", which has been printed here to provide a checklist for teachers reviewing other energy materials.

Materials in a format that students will read or view directly are designated as **Student Material**. Materials such as teacher guides used by teachers to explain activities and concepts to students are classified as **Teacher Resources**. Some media packages contain both. Other materials are designated as **General Information**; these are not specifically classroom oriented.

The **Approaches** section notes whether the material is sequenced, open-ended, value-clarification, etc. Some of the emphases and biases of the materials are noted.

Student Outcomes indicate whether or not the learning objectives of the materials are clearly stated and whether stated objectives are cognitive or affective. In many of the materials, student outcomes are not clearly identified.

The **Teacher Background Assumed** section tries to identify extra background a teacher might need for the materials, and suggests types of support materials, if appropriate. It also identifies background information (diagrams, glossary, bibliography) found in the materials.

Films for Energy Education

The Minnesota Energy Agency has placed a collection of energy films and filmstrips in the audio-visual library of the Department of Natural Resources. These are available for use in Minnesota without charge. A list of available films outlining content, length, and grade level is available from the Minnesota Energy Agency, Information and Education, 980 American Center Building, 150 E. Kellogg, St. Paul, Minnesota 55101, 612-296-5769 or 800-652-9028. To book films, contact the Film Loan Library, Department of Natural Resources, Centennial Office Building, 658 Cedar St., St. Paul, Minnesota 55155, 612-296-0899.

CRITERIA FOR REVIEWING ENERGY MATERIALS

A. Point of View

1. What is the bias of the material? (Check the source, read the information about the author. What were the author's previous works? Who funded the curriculum development and for what purpose?).

2. Does the material claim to be exploring both sides of a controversial issue? How balanced is the presentation? Would it be better to go to original sources with the conflicting points of view than to stop with material that tries to represent both?

3. Are any specific values espoused? What are they? Are they controversial? (Even energy conservation can be controversial. Think of recycling, carpooling, etc.)

4. Do the authors make any general assumptions or take things for granted?

B. Content of Materials

1. Does the material approach energy from the physical science aspect (what is energy?), the social sciences aspect (how does energy affect our society?), or a combination of these? Does it represent the environmental, economic and social aspects of the problem?

2. What are the main topics of the material?

3. How complete is the material?

4. Are sources of data reliable, accurate, up-to-date?

C. Background

1. What background is assumed for the class?

2. What background is assumed for the teacher?

3. What support materials are necessary to use this material well?

4. Is it compatible with teaching methods used in your classroom?

5. Is there a bibliography in the material?

D. Presentation

1. Are concepts, vocabulary, activities, and presentation consistent for the stated grade level?

2. Are sources cited in the material for the major assertions and assumptions?

3. Is enough information given to guide the teacher through suggested activities?

4. What techniques are used to get the material's point of view across?

Activities

ACTIVITIES GRADE LEVEL INDEX

Entries are made *only* at the lowest appropriate level in this index, although many can be used on more than one level. Elementary is defined as K-6, junior high is 7-9, and senior high is 10-12.

K-12

Award Winning Energy Education Activities (NSTA)
Energy Activities for the Classroom (Coon and Alexander)
Energy and Conservation Education: Activities for the Classroom (EME)
Energy and Education: Teaching Alternatives (NEA)
Energy Calendar (EME)
Energy Environment Ethics Economics Curriculum Activity Guides (Conservation Consultants)
Energy: Food and You (Washington State)
Interdisciplinary Student/Teacher Materials in Energy, The Environment and The Economy (NSTA)
Rain Posters: Urban Ecotopia, Suburban Ecotopia, and Stepping Stones (Rain)
Recyclopedia (Simons)
Solar Energy Education Packet (Center for Renewable Resources)
Staples Energy Conservation Program (Gildow, et al)

Elementary and Above

Classroom Energy House (Chase) (5-12)
Contract About the Energy Crisis (Good Apple) (4-6)
A Curriculum Activities Guide to Electric Power Generation and the Environment (Project K.A.R.E.) (4-12)
Discovering Coal (National Coal Association) (K-4)
Elementary Energy Education (Pasco Co.) (4-6)
Energetics: Nature's Energy Game (Soft-Aware) (5-12)
Energy Activities and Coloring Book (Solar-Ed) (K-3)
Energy Activities with Energy Ant (FEA) (2-4)
Energy All Around (Pine and Levine) (2-4)
Energy Alternatives: Basic Science Inquiry Kit (Weber Costello) (6-8)
Energy and Man's Environment: Activity Guide (EME) (4-12)
Energy and My Environment (Florida Energy Office) (K-6)
Energy Conservation (Instructo) (K-2)
Energy Conservation Activity Packet (Iowa) (K-6)
The Energy Crisis: What You Can Do About It? (Standard Oil) (3-7)
An Energy Curriculum for the Elementary Grades (Indiana) (K-6)
Energy Education in Elementary Science (Minneapolis Public Schools) (K-6)
Energy Education in Elementary Social Studies (Mpls. Public Schools) (1-6)
Energy Education: The Mizer Series (Oklahoma State University) (pre-school-1)
Energy for Today and Tomorrow (Learning) (1-6)
Energy Learning Center (Chevron) (6-8)
Energy: Our Responsible Use of It (Center for Econ. Education) (2-4)
Energy Packet (Massachusetts Audubon Society) (4-9)
Energy Sources/SCIIS (Rand McNally) (5)
Everyday Conservation (Instructor) (1-6)
Experiments from Edison Series (Charles Edison Fund) (5-12)

Exploring with Solar Energy (Metos and Bitter) (5-9)
Get Your Hands on Energy: A Teaching Guide About Renewable Energy and Conservation (New Western Energy Show) (K-9)
Handbook of Energy Lesson Plans/HELP (Cooper Solar Group Co.) (4-college)
Home Sweet Earth (Highline Public Schools) (K-3)
It's Your Environment: Things to Think About-Things to Do (Environmental Action Coalition) (K-9)
Make Your Own Alternative Energy (Cummings) (5-12)
Minnesota Energy Activities for Elementary Students (MN Dept. of Ed.) (K-6)
Natural Gas Serves Our Community (American Gas Association) (1-6)
Putting the Sun to Work (Bendick) (3-6)
Science Activities in Energy (Oak Ridge) (4-9)
Tapping the Earth's Heat (Lauber) (3-6)
Teaching About Energy Awareness: 33 Activities (University of Denver) (5-12)
Teaching About Energy. . .How to Turn Them On (Natural Gas Council) (4-12)
Tilly's Catch a Sunbeam Coloring Book (Spetgang) (1-6)

Junior High and Above

Basic Teaching Units (BTU's) on Energy (Lay and McCurdy) (7-12)
Current Energy and Ecology (Curriculum Innovations) (7-12)
Deciding How to Live on Spaceship Earth (Ulrich, et al) (7-12)
Energy (LeMoine) (7-9)
Energy Activities for Industrial Arts (MN Dept. of Ed.) (7-12)
Energy Activities for Junior High Science (MN Energy Agency) (7-12)
Energy Activities for Junior High Social Studies (MN Energy Agency) (7-12)
Energy and Ecology: A Newsbook (Reading Lab.) (7-12)
Energy/Consumerism: Home Economics (MIMC) (7-12)
The Energy Crunch Cookbook (Bingham and Riccio) (7-12)
Energy Education in the Home: An Energy Education/Conservation Curriculum Guide for Home Economics Teachers (University of Tennessee) (7-12)
Energy Futures (Highline Public Schools) (7-9)
Energy Management Strategies for Colorado Home Economics Teachers (Colorado State University) (7-12)
The Energy Show (New Western Energy Show) (7-12)
The Environment: Activities and Explorations. Unit Six: Understanding Our Energy Needs (Brenchly and Tower) (7-12)
Environmental Concerns: The Nation/Environmental Concerns: The World (Carnegie-Mellon University) (9-12)
Environmental Education/Driver Education (MN Dept. of Ed.) (9-12)
The Great Allegheny County Energy-Saver's Cookbook (Project Pacesetter) (7-12)
Heatloss (MN Dept. of Ed.) (7-12)
Household Energy (Ginn and Co.) (7-12)
The Household Energy Game (Smith and Jenkins) (7-12)
Ideas and Activities for Teaching Energy Conservation (University of Tennessee) (7-12)
Industrial Arts Manual to the Construction of Miniaturized Alternative Energy Source Equipment (Rossdorph) (7-12)
Minnesota Energy Learning Modules/Industrial Arts (MN Dept. of Ed.) (7-12)
Minnesota Energy Resource Units/Home Economics (MN Dept. of Ed.) (7-12)
Minnesota Energy Resource Units/Science (MN Dept. of Ed.) (7-12)
Minnesota Energy Resource Units/Social Studies (MN Dept. of Ed.) (7-12)
Pedal Power: In Work, Leisure, and Transportation (McCullagh) (7-12)
The Powerline Protest: Short Stories in Law Education (Radar et al) (7-12)
Price Changes in the Energy Marketplace (Minneapolis Public Schools) (9-12)

Save Energy and Have Fun With Textiles (American Textile Mfg. Inst.) (7-12)
The Solar Cookery Book: Everything Under the Sun (Halacy) (7-12)
Solar Energy (Branley) (7-12)
Solar Energy (Hoke) (8-12)
Solar Energy Project (New York State Education Dept.) (7-12)
The Solar Food Dryer Book (Andrassy) (7-12)

Senior High

Build Your Own Solar Water Heater (Campbell) (10-12)
Energy and Order (Terry and Witt) (10-12)
Energy and Society: Investigations in Decision Making (BSCS) (10-12)
The Energy Crisis (Bender and McCuen) (10-12)
The Energy Crisis: What Are Our Choices (Buggey and Tyler) (10-12)
Energy Management Game (BSCS) (10-12)
Energy: Science World Visuals 3 (Benjamin and Proujan) (10-12)
Energy X (Warns) (10-12)
Exploring Alternative Energy Systems (Anway et al) (10-12)
Fuel Conservation Unit for Traffic Safety Education/I Love My Car (Dyckman) (10-12)
The Hydrocarbon Civilization (MESFI) (10-12)
Introduction to Energy (Posthumna) (10-12)
Living with Energy (Standard Oil) (10-12)
Of Democracy, Truth, and Courage (Tanner) (10-12)
Practical Sun Power (Rankins and Wilson) (10-12)
Solar Energy Experiments for Secondary School Students (Norton) (10-12)
Understanding Solar Energy Systems (Keaton et al) (10-12)

ACTIVITIES

Title: Award Winning Energy Education Activities

Author: ed. by Helen Carey and NSTA **Issue Date:** 1977

Suggested Grade Levels: 2 – 12

Suggested Subject Areas: economics, home ec. consumerism, math, design, science, physical science, art, social studies, drafting

Media Types: 38 page booklet

Teacher Resource

Cost: free

Source: ERDA Technical Information Center, P.O. Box 62, Oak Ridge, TN 37830 (publication #ERHQ-0011)

Energy Topics: sources, recycling, economics, use, definition, forms

Types of Activities: class discussions and projects, role playing, experiments, math, design problems

Approaches: this is a collection of ten award winning units selected by National Science Teachers Association

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? varies with different activities; very little background material is provided

Other/General Comments: This is a good, varied idea list of activities.

Title: Basic Teaching Units (BTU's) on Energy

Author: Gary A. Lay & Dr. Donald McCurdy (ed.) **Issue Date:** 1979

Suggested Grade Levels: jr. – sr. high (ed.)

Suggested Subject Areas: physical sciences, social studies, home economics, industrial arts, economics, math, agriculture

Media Types: package of 22 units

Teacher Resource

Cost: Approx. $20.00

Source: Nebraska Energy Office, Box 95085, Lincoln, Neb. 68509

Energy Topics: use, conservation, sources, economics, agriculture, electricity, future, food, food preparation

Types of Activities: experiments, projects, discussions

Approaches: strongly expresses size of problem and great need for conservation and individual involvement. Units are diverse, self-contained, and relevant to specific subject areas.

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive; Affective

What Teacher Background is Assumed? varies with unit. Many experiments assume experience supervising science labs. Much background information is included.

Other/General Comments: This contains a broad range of ideas, and is well worth looking through. Some units present only one point of view on controversial topics (such as nuclear). Many hands-on activities are included.

ACTIVITIES

Title: Build Your Own Solar Water Heater

Author: Stu Campbell **Issue Date:** 1978

Suggested Grade Levels: Senior High

Suggested Subject Areas: Industrial Arts

Media Types. 109 page paperback book

General Information

Cost: $7.95

Source: Garden Way Publishing, Charlotte, Vermont 05445

Energy Topics. solar energy, solar collectors for domestic hot water heaters, solar-heated swimming pools

Types of Activities: detailed projects involving the construction and installation of various types of solar hot water heaters

Approaches: overview of solar energy and its application to solar domestic hot water heaters

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? experience in construction and plumbing would be helpful, although the directions are explicit for the designed projects; listing of manufacturers of solar products and bibliography included

Other/General Comments: Visuals are well done, and provide details relating to the projects.

Title: Classroom Energy House

Author: Myron C. Chase **Issue Date:** 1977

Suggested Grade Levels: upper elementary – high school (depending upon use)

Suggested Subject Areas: industrial arts, science, general information

Media Types: kit with aluminum house, removable windows, doors, and insulation, electric heat source, student workbooks, and teacher's guide

Teacher Resource; Student Material

Cost: $125.00, additional materials available for combustion fuels at added cost

Source: Nature Study Aids, Inc., Rt. 1, Red Wing, MN 55066

Energy Topics: conservation in home construction

Types of Activities: experiments and demonstrations

Approaches: materials are provided for experiments that deal with insulation, efficiency of heat sources, temperature controls, ventilation, and home location

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none, materials are easy to manipulate

Other/General Comments: This is an interesting approach to teaching energy conservation in the home. Materials lend themselves to a wide range of teacher and student developed activities that relate to existing curriculum. Use student workbooks as a stimulus for experiments; may be difficult for some groups to follow. Caution should be used with the combustion fuels.

ACTIVIT'ES

Title: Contract About the Energy Crisis

Author: Good Apple Staff **Issue Date:** 1974

Suggested Grade Levels: upper elementary

Suggested Subject Areas: science, social studies, language arts

Media Types: 18" x 24" hands-on poster

Student Material

Cost. $4.00/25

Source: Good Apple, Inc., P.O. Box 299, Carthage, Illinois 62321

Energy Topics: conservation and awareness of energy problems

Types of Activities: surveying, letterwriting, collecting current events articles, storywriting

Approaches: students "contract" for the activities in which they will participate

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is an interesting approach to student involvement in the energy crisis.

Title: Current Energy and Ecology

Author Staff writers **Issue Date:** monthly issues

Suggested Grade Levels: grades 7 – 12

Suggested Subject Areas: science, social studies

Media Types: monthly periodical

Student Material

Cost. $3.95/school year

Source: Current Energy and Ecology, Curriculum Innovations, Inc., 501 Lake Forest Ave., Highwood, IL 60040

Energy Topics: focuses on different energy topics each issue

Types of Activities: discussion questions, projects suggested for each article

Approaches: provides current information in an objective manner

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; teacher's edition supplied with fifteen student editions; sources of additional information listed in student edition.

Other/General Comments: Energy is one of seven topics covered each month. This is an interesting medium for addressing energy.

ACTIVITIES

Title: A Curriculum Activities Guide to Electric Power Generation and the Environment

Author: Project K.A.R.E. **Issue Date:** 1975

Suggested Grade Levels: 4 – 12

Suggested Subject Areas: biology, chemistry, social studies, industrial arts, consumer education

Media Types: 145 page booklet

Teacher Resource

Cost: $5.50

Source: Project K.A.R.E., Colony Office Bldg., Rte. 73 & Butler Pike, Blue Bell, PA 19422

Energy Topics: Energy and the Consumer, Energy and Water Pollution, Energy and Air Pollution

Types of Activities: discussions, experiments, surveys

Approaches: Teachers were asked to design activities for the 3 topics noted above. Their write-ups, with comments from course instructors, are included.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? varies with activity. Some assume no background.

Other/General Comments: This collection contains some very interesting activities. Its main disadvantage is the need to go through the book page by page to find them, due to a lack of grade or subject area index.

Title: Deciding How to Live on Spaceship Earth

Authors: Daniel M. Ulrich, Steven Woolard, Rodney F. Allen, Carmelo Foti **Issue Date:** 1975

Suggested Grade Levels: junior and senior high school

Suggested Subject Areas: civics, social studies, American values, interdisciplinary

Media Types: 134 page book

Teacher Resource

Cost: $5.44

Source: McDougal, Littell & Co., Box 1667, Evanston, IL 60204

Energy Topics: use, conservation, lifestyle choices

Types of Activities: discussion, listing, some research, simulations

Approaches: the book has seven sections of values "dilemmas" organized around different environmental problems; the section on energy, like the others, contains open-ended activities, many of which are of the "pollution vs. jobs" role playing type

Student Outcomes: Clearly Stated? No **Areas:** Cognitive, Affective

What Teacher Background is Assumed? teacher must be competent in moderating values discussions; some information is provided at the beginning of each section, but teacher would probably want to gather much more before starting unit

Other/General Comments: Several of the dilemmas either don't give enough information for decision making, or give only enough to promote a very simplistic solution. In general, however, many of the scenarios would be useful and enjoyable challenges to students. More background information is essential.

ACTIVITIES

Title: Discovering Coal

Author: National Coal Association **Issue Date:** 1980

Suggested Grade Levels: K – 4

Suggested Subject Areas: all subject areas

Media Types: filmstrip, cassette, 10 masters, 3 posters, coal sample, teacher's guide

Teacher Resource

Cost. $8.95

Source: National Coal Association, P.O. Box 14306, Dayton, OH 45414

Energy Topics: coal

Types of Activities: discussion, comparison, drawing, game, role playing, model building, matching, number sequencing

Approaches: provides a wide range of media types and suggested activities, fairly objective viewpoint for the suggested grade levels

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? none, background information included for many activities, short bibliography, should give more emphasis to conservation and environmental impacts of mining and burning coal

Other/General Comments: Segments of the kit vary in difficulty. Select activities and components to supplement your energy curriculum.

Title: Elementary Energy Education

Author: Pasco County Schools **Issue Date:** 1976

Suggested Grade Levels: upper elementary (designed for grade 4)

Suggested Subject Areas: science

Media Types: 108 looseleaf pages – teacher method book; learning activity modules

Teacher Resource; Student Material

Cost: $8.25 teacher's guide/90¢ per student module

Source: Energy Management Center, P.O. Box 190, Port Richey, Florida 33568

Energy Topics: energy production, consumption, and conservation; energy definition; conversion; historical aspects; biological energy systems; environmental impact; fossil fuels; alternate energy sources

Types of Activities: experiments, surveys, worksheets, constructions, research

Approaches: six student learning activity packets that could be used either as a class activity or as programmed learning

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none; bibliography included; background information provided in teacher method book

Other/General Comments: This could be used as a total program or packets could be used individually. It is an interesting treatment of nature's energy.

ACTIVITIES

Title: Energetics: Nature's Energy Game

Author: Cathy Horvitz **Issue Date:** 1979

Suggested Grade Levels: grade 5 – adult

Suggested Subject Areas: general information

Media Types: board game

General Information

Cost: $15.95

Source: Soft-Aware Associates, Inc., P.O. Box 80, Marlborough, NH 03455

Energy Topics: conservation

Types of Activities: game

Approaches: game approach to discovering nature's energy saving methods and matching them to people's conservation practices

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is an interesting game that teaches seldom considered concepts.

Title: Energy

Author: David D. LeMoine **Issue Date:** 1978

Suggested Grade Levels: junior high

Suggested Subject Areas: science, reading

Media Types: 64 page workbook

Student Material

Cost: $1.23

Source: William H. Sadlier – Oxford Publishing Company, 11 Park Place, New York, NY 10007

Energy Topics: fossil fuels, alternative energy sources, nuclear power, oil shale

Types of Activities: mainly answering comprehension questions based on the reading, various activities suggested for each chapter

Approaches: presents both sides of controversial issues such as nuclear and strip-mining for coal; very light treatment of conservation

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? would be helpful to be familiar with current information on the included topics or have current references available for student use; should expand upon conservation

Other/General Comments: This is an interesting format that stresses comprehension of the issues; graphics add to the understanding. It has a wide range of possible uses, such as for senior high remedial reading classes or gifted upper elementary students.

ACTIVITIES

Title: Energy Activities and Coloring Book

Author: Solar-Ed. Corp. **Issue Date:** 1978

Suggested Grade Levels. primary

Suggested Subject Areas: general information

Media Types: short, unpaged booklet or spirit master set

Student Material

Cost. $19.95/spirit master set or $5/booklet

Source: Solar Ed. Corp., Energy Curriculum Materials, 1627 Litchfield Turnpike, P.O. Drawer X, Woodbridge, CT 06525

Energy Topics: various forms of solar energy

Types of Activities: cutouts, mazes, pictures to color, experiments

Approaches: These brief, unsequenced activities could be used as a supplement to solar energy discussions

Students Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: The set can be used to provide pictures and patterns which could be copied for use with a class.

Title: Energy Activities for the Classroom

Author: H. L. Coon and M. Y. Alexander **Issue Date:** 1976

Suggested Grade Levels: K – 12

Suggested Subject Areas: social studies, science

Media Types: 148 page booklet

Teacher Resource

Cost: $4.95

Source: ERIC Center for Science, Math & Environmental Ed., College of Education, Ohio State U., 1200 Chambers Road, Columbus, OH 43210

Energy Topics: sources, conversion, distribution, conservation, waste

Types of Activities: discussion, demonstration, simple lab experiments, research

Approaches: a lot of listing and discussing and reporting on one's family's energy use pattern, activities arranged around stated concepts, and divided by grade and subject

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? none, although a teacher would want support information

Other/General Comments: The collection of activities is uneven; it contains several good ideas. Activities are all suggested by teachers.

ACTIVITIES

Title: Energy Activities for Industrial Arts

Author: writing team **Issue Date:** 1977

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: industrial arts

Media Types: collection of 21 single page activities

Teacher Resource

Cost: N/C

Source: Industrial Education Supervisor, Minnesota State Department of Education, Capitol Square, 550 Cedar Street, St. Paul, MN 55101

Energy Topics: solar, wind, conduction/insulation, conservation

Types of Activities: constructions, experiments, car tune-ups, reading various meters, drafting, computations

Approaches: series of hands-on activities relating to various areas within industrial arts

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? vary from no background assumed to knowing how to tune up a car

Other/General Comments: Use activities selectively to supplement existing curriculum.

Title. Energy Activities for Junior High Science

Author: Minn. Energy Materials Task Force **Issue Date:** 1977

Suggested Grade Levels: junior high and above

Suggested Subject Areas: science

Media Types: folder with six activity cards plus worksheets

Teacher Resource

Cost: free

Source: Minnesota Energy Agency, Information and Education, 980 American Center Building, 150 E. Kellogg Blvd., St. Paul, MN 55101

Energy Topics: solar, definitions and properties of energy, use, forms, conservation

Types of Activities: experiments, discussions, listing, math exercises on energy consumption

Approaches: materials combine simple experiments with suggested discussions and challenges to students' creativity in developing designs and experiments; there is a value exploration orientation

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? no special background assumed, other than some basic knowledge of physical science principles; a few references are listed

Other/General Comments: This is a well-designed series of activities which could also be used for upper grades. Teachers should look at social studies activities from same source.

ACTIVITIES

Title: Energy Activities for Junior High Social Studies

Author: Minn. Energy Materials Task Force **Issue Date:** 1977

Suggested Grade Levels: junior high and above

Suggested Subject Areas: social studies

Media Types: folder with seven activity cards plus worksheets

Teacher Resource

Cost: free

Source: Minnesota Energy Agency, Information and Education, 980 American Center Building, 150 E. Kellogg Blvd., St. Paul, MN 55101

Energy Topics: peat as a fuel, energy reporting in media, future, use, alternative lifestyles

Types of Activities: simple experiments, newspaper reading, surveys, future wheel, interviews, discussions

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? no special background needed; some reference sources are listed

Other/General Comments: This is a well-designed set of activities, many of which are also suitable for higher grades and adults. Teachers should look at science activities from same source.

Title: Energy Activities with Energy Ant

Author: Federal Energy Administration **Issue Date:** 1975

Suggested Grade Levels: second or third with vocabulary help, 4th

Suggested Subject Areas: general interest

Media Types: 28 pg. coloring book

Student Material

Cost: free (limited)

Source: Federal Energy Administration, 175 W. Jackson, Chicago, Illinois 60604

Energy Topics: short background on energy use, some low level instructions about specific conservation measures

Types of Activities: directed, fill-in-the-blank type, a few puzzles, riddles, maze, rummy-type card game

Approaches: activities directed, not open-ended, no sequence, "you should" approach

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none assumed

Other/General Comments: If kids are really excited about coloring books, this may give them some information. Concepts are okay for lower primary, vocabulary probably intermediate. Puzzles rather than energy seem to be main point of booklet.

ACTIVITIES

Title: Energy All Around

Author: Tillie S. Pine and Joseph Levine **Issue Date:** 1975

Suggested Grade Levels: 2 -- 4 (may need reading help)

Suggested Subject Areas: science

Media Types: short book

Student Material

Cost: $6.95

Source: McGraw Hill, 1221 Avenue Americas, New York, NY 10020

Energy Topics: what energy is, how it's transferred and converted

Types of Activities contains background information and simple experiments, sequenced

Approaches: open-ended, discovery

Student Outcomes: Clearly Stated? No **Areas:** Cognitive, Affective

What Teacher Background is Assumed? no background assumed, concepts stated simply in several different ways, with many examples

Other/General Comments: This is a good treatment of energy at beginning level, with many easy activities to involve kids.

Title: Energy Alternatives: Basic Science Inquiry Kit

Author: Jeanne Dietsch **Issue Date:** 1979

Suggested Grade Levels: grades 6 – 8

Suggested Subject Areas: science

Media Types: kit including teacher's manual, 10 spirit masters, and materials for 22 experiments

Teacher Resource

Cost: $38.00

Source: Weber Costello, Department S, 1900 N. Narragansett, Chicago, IL 60639

Energy Topics: solar, wind, water, tidal, ocean thermal, and geothermal energy, energy efficiency in homes and automobiles

Types of Activities: experiments

Approaches: principles of energy alternatives are developed through the designed experiments

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none, procedure for experiments outlined in teacher's guide

Other/General Comments: This is best used in a learning station for individuals or in a small group setting because only 1 set of materials is supplied for each experiment. The teacher would need to reproduce the directions for each experiment from the teacher's guide because the scientific explanation is given for each one along with the directions.

ACTIVITIES

Title: Energy and Conservation Education: Activities for the Classroom

Author: John Jones, et al **Issue Date:** 1977

Suggested Grade Levels: K – 12

Suggested Subject Areas: interdisciplinary; also separated by specific subjects

Media Types: 4 large ring-bound notebooks, separated into grade levels 1-3, 4-6, 7-9, 10-12

Teacher Resource

Cost: $32.00/each; $116.00/set

Source: Energy and Man's Environment, 7874 S.W. Nimbus Avenue, Beaverton, Oregon 97005

Energy Topics: sources, uses, conversion, impacts, limits, futures

Types of Activities: discussion, demonstration, surveys, projects, games, coloring books, simulations, role playing, experiments

Approaches: each notebook is organized into the six topic sections noted above; there is a matrix included to locate subject areas, recommended time and specific levels; activities are generally unsequenced and open-ended

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? varies with different activities at each level; references are suggested with each activity

Other/General Comments: This is a good, well-organized, comprehensive idea list. Many of the activities have been suggested by teachers. Teachers using it should also look at the volume below their grade level, for some fairly complex concepts are designated for introduction at lower levels. A sampler of all of EME's materials available upon request.

Title: Energy and Ecology: A Newsbook

Author: The Reading Laboratory **Issue Date:** 1976

Suggested Grade Levels: junior high and above

Suggested Subject Areas: interdisciplinary, reading, science, basic skills

Media Types: booklet with teacher guide leaflet

Teacher Resource; Student Material

Cost: $2.25

Source: The Reading Laboratory, Inc., 55 East Day Street, South Norwalk, Connecticut 06854

Energy Topics: sources, uses, future sources, protein, economy

Types of Activities: center on vocabulary, reading comprehension, writing skills, and discussion

Approaches: each topic starts with an informative article, followed by skills activities; as much emphasis is placed on reading and analyzing skills as on energy information

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none needed, each topic includes a glossary, some diagrams are included

Other/General Comments: This is good integration of energy topics with skills practice.

ACTIVITIES

Title: Energy and Education: Teaching Alternatives

Author: Fredrick E. Posthuma, ed. **Issue Date:** 1978

Suggested Grade Levels. K – 12

Suggested Subject Areas: science, social studies, language arts

Media Types: 142 page paperback book

Teacher Resource

Cost: $6.95

Source: National Education Association, The Academic Building, Saw Mill Road, West Haven, CT 06516

Energy Topics: energy education, energy issues, information on energy

Types of Activities. discussion, research, simple experiments

Approaches: selected readings on energy education with samples of lessons

Student Outcomes. Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none, helpful for teachers at all stages of energy education

Other/General Comments: This provides background information for teachers interested in presenting an energy education program.

Title. Energy and Man's Environment: Activity Guide (7 parts)

Author: John Jones, Editor **Issue Date:** 1976

Suggested Grade Levels: upper elementary to senior high

Suggested Subject Areas: science, social studies, language, see below

Media Types. 7 booklets

Teacher Resource

Cost: $25.00

Source: Energy & Man's Environment, 7874 S.W. Nimbus Avenue, Beaverton, Oregon 97005

Energy Topics: sources, uses, conversion, impacts, limits, future and activity guide

Types of Activities: research, discussion, simulation, some projects and simple experiments

Approaches: activities list, many activities demand fairly sophisticated research skills, many are suggested field trips

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? depending on the specific activity, quite a bit of background may be assumed; no bibliography or glossary; minimum background information provided

Other/General Comments: This is a "brainstorming" type list of energy activities, containing everything from simple, no-equipment, no-background types, to activities showing organic chemistry structures and suggesting extensive library research, or asking student to find figures not easily available.

ACTIVITIES

Title: Energy and My Environment

Author: Dr. Matthew J. Brennan **Issue Date:** 1979

Suggested Grade Levels: K – 6 (7 – 9 and 10 – 12 guides being developed)

Suggested Subject Areas: all subject areas

Media Types: 146 page guide

Teacher Resource

Cost: free

Source: State Energy Office, State of Florida, Department of Administration, 301 Bryant Building, Tallahassee, FL 32304

Energy Topics: conservation, uses

Types of Activities: observation, storytelling, discussion, valuing, simple experiments, drawing, research

Approaches: activities stress energy awareness and conservation

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none, glossary included

Other/General Comments: These are well organized activities that follow seven themes recurring at each grade level. A few activities relate specifically to Florida.

Title: Energy and Order

Author: Mark Terry/Paul Witt **Issue Date:** 1976

Suggested Grade Levels: senior high and up, others with modification

Suggested Subject Areas: physical science, possibly general biology, social studies

Media Types: 42 page book

Teacher Resource

Cost. $3.00

Source. Friends of the Earth Foundation, 124 Spear St., San Francisco, Cal. 94105

Energy Topics: heat, energy conversion and transfer, simple thermodynamics principles, energy and food, nuclear power, U.S. lifestyle

Types of Activities: many good, simple experiments, suggested discussions and simulations; almost all have complete student participation, and are fairly fast moving

Approaches: combines experiments illustrating energy concepts with open-ended discussions, culminates with activities and discussions on values and choices, comparing U.S. lifestyle of consuming with other nations; emphasizes problems of nuclear power generation; environmental viewpoint

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive; Affective

What Teacher Background is Assumed? sections dealing with concepts/experiments in the phys. sciences probably require some minimum background; sections dealing with U.S. lifestyles and values don't need much; some background information is provided; many references cited in body of text and in separate bibliography

Other/General Comments: This is an excellent supplement for a unit on energy, lifestyle, values and choices.

ACTIVITIES

Title: Energy and Society: Investigations in Decision Making

Author: Biological Sciences Curriculum Study **Issue Date:** 1976

Suggested Grade Levels. high school and up

Suggested Subject Areas: science, interdisciplinary

Media Types: teacher's manual, student booklets, slide set, illustration set, 8mm film loop, simulation game

Teacher Resource; Student Material

Cost: $98.50

Source: Hubbard Scientific, P.O. Box 104, Northbrook, Illinois 60062

Energy Topics: 1) physical laws; 2) politics; 3) environmental impact; 4) attitudes and feelings; 5) economics: public and private; 6) health and safety; 7) design and technology

Types of Activities: discussion, projects, community research and explorations, simulation game

Approaches: the unit is open-ended, emphasizing explorations of values and attitudes; it organizes around the seven general ideas noted under "topics"

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? suggestions are included for sources of more information; much information is given in the different components; material emphasizes open-ended format, with teacher learning with students

Other/General Comments: This is a comprehensive, well organized, interesting unit which could be used in many different major fields.

Title: Energy Calendar

Author: Energy and Man's Environment staff **Issue Date:** yearly, beginning with July

Suggested Grade Levels: K – 12

Suggested Subject Areas: all subjects

Media Types: poster-sized calendar

General Information

Cost: $2.50

Source: Energy and Man's Environment, 7874 S.W. Nimbus Avenue, Beaverton, OR 97005

Energy Topics: conservation, energy facts

Types of Activities: simple projects and activities

Approaches: develops a constant awareness of energy facts and conservation measures during the school year

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is an interesting item which could be the stimulus for a student-developed energy calendar.

ACTIVITIES

Title: Energy Conservation

Author: Instructo **Issue Date:** 1979

Suggested Grade Levels. K – 2

Suggested Subject Areas: science, social studies

Media Types: 8 large bulletin board cutouts

Teacher Resource

Cost: $5.18

Source: Instructo/McGraw-Hill, Paoli, PA 19301

Energy Topics: conservation

Types of Activities: discussion, listing, illustrating, interviewing

Approaches: uses cutouts as the stimulus for discussion to motivate students to conserve energy

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none, short bibliography included in teaching guide

Other/General Comments: Conservation measures are appropriate for primary age students. The illustrations are attractive.

Title: Energy Conservation Activity Packet

Author: Iowa Dept. of Public Instruction
Iowa Energy Policy Council **Issue Date:** 1977

Suggested Grade Levels: K – 6

Suggested Subject Areas: interdisciplinary, includes social studies, language arts, science

Media Types: five plastic-bound notebooks, arranged by grade with K–2 combined in one

Teacher Resource

Cost: $2/each level; $10/set

Source: Iowa Energy Policy Council, State Capitol Complex, Des Moines, Iowa 50319

Energy Topics: use, sources, scarcity, conservation, lifestyle

Types of Activities: discussions, library research, simple demonstrations and experiments; they are open-ended and unsequenced

Approaches: this collection intersperses background sections for the teacher with suggested activities and activity sheets for students; it contains many value choice types of activities

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? varies with activity; a good bibliography is included

Other/General Comments: The levels of many activities seem somewhat uneven, with skills demanded not always consistent with concept or vocabulary level. The teacher should look at lower grade level materials as well as that for grade taught. In general, this is a useful, well-organized collection.

ACTIVITIES

Title: Energy/Consumerism: Home Economics

Author: MN Dept. of Education **Issue Date:** 1975

Suggested Grade Levels: junior high and up

Suggested Subject Areas: home economics, consumer ed., any energy awareness unit

Media Types: folder with activities enclosed

Teacher Resource

Cost: free to home economics teachers

Source: Minnesota Curriculum Service Center, 3554 White Bear Avenue, White Bear Lake, MN 55110

Energy Topics: use, waste, conservation

Types of Activities: survey, discussions, games, projects

Approaches: awareness and values clarification approaches

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none required—some provided with different activities; teacher should feel comfortable leading values discussion

Other/General Comments: These activities could fit into a number of units dealing with energy/environment, as well as making up a unit in themselves.

Title: The Energy Crisis

Author: D. L. Bender, G. E. McCuen **Issue Date:** 1973

Suggested Grade Levels: high school and up

Suggested Subject Areas: social studies

Media Types: pamphlet, 32 pages

Student Material

Cost: $.98

Source: Greenhaven Press, Inc., 577 Shoreview Park, St. Paul, MN 55112

Energy Topics: energy crisis, nuclear power safety

Types of Activities: discussion

Approaches: presents 2 sets of articles with opposing views presented in each set; also provides guidelines for analyzing points of view

Student Outcomes: Clearly Stated? Outcomes are primarily in reading and analysis skills, using energy controversies as a vehicle.

What Teacher Background is Assumed? further discussion of content of articles would demand support materials providing more information.

Other/General Comments: The focus of this pamphlet is analysis of opposing viewpoints. The articles chosen remain timely, but demand good reading skills. This could be the basis of excellent exercises in critical reading, and values explorations.

ACTIVITIES

Title: The Energy Crisis: What Are Our Choices

Author: JoAnne Buggey and June Tyler **Issue Date:** 1976

Suggested Grade Levels. high school

Suggested Subject Areas: social studies, language arts

Media Types. 118 page paperback

Student Material

Cost: $4.84

Source: Prentice-Hall, Inc., Englewood Cliffs, NJ 07632

Energy Topics: who is to blame for energy crisis; present and future alternatives

Types of Activities: discussions, writing, analyzing & comparing

Approaches: presents articles with conflicting views, and follows them with study questions

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? Background varies with different articles. Some oversimplify. The book might be used to start discussions, then lead to outside corroborating references.

Other/General Comments: This is a well-organized set of articles. The environmental point of view is under-represented in the section on causes of the crisis.

Title: The Energy Crisis: What You Can Do About It?

Author: Standard Oil **Issue Date:** 1978

Suggested Grade Levels. 3 – 7

Suggested Subject Areas: science

Media Types: 5 spirit masters and brief teacher's guide

Teacher Resource; Student Material

Cost: $1.00

Source: Amoco Teaching Aids, P.O. Box 1400-K, Dayton, OH 45414

Energy Topics: sources, use, products from oil, cost, conservation

Types of Activities: survey, discussion, demonstration, checklist

Approaches: this gives a general background on some aspects of energy use; approach is fairly objective, informative

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none needed

Other/General Comments: This could be a useful supplement to an energy unit.

ACTIVITIES

Title. The Energy Crunch Cookbook

Author: Joan Bingham and Dolores Riccio **Issue Date:** 1979

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: home economics

Media Types: 202 page cookbook

General Information

Cost: $7.95/paperback; $12.50/hardcover

Source: Chilton Company, Catalog Division, Chilton Way, Radnor, PA 19089

Energy Topics: conservation, uses

Types of Activities: food preparation

Approaches: stresses using energy efficient appliances and methods of cooking

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: In addition to the recipe section, information is provided on energy efficiency of various appliances, energy saving tips for the kitchen, and sun-drying foods.

Title: An Energy Curriculum for the Elementary Grades

Author: Writing team **Issue Date:** 1979

Suggested Grade Levels: K–1; 2–3; 4–6; junior high available in 1980 and senior high in 1981

Suggested Subject Areas: social studies, all subjects

Media Types: set of 3 looseleaf guides, approximately 140 pages each

Teacher Resource

Cost: free

Source: Kathy Lane, Indiana Department of Public Instruction, 229 State House, Indianapolis, IN 46204

Energy Topics: conservation, energy products, energy habits, energy sources, energy problems

Types of Activities: wide range of social studies, language arts, math, and art activities

Approaches: approaches energy from more of a social studies point of view than science; adaptations are given for grade level, language arts, and math for each lesson

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none; annotated bibliography for each unit

Other/General Comments: This has an extremely well organized format; it can be used as an energy curriculum or individual activities may be selected.

ACTIVITIES

Title: Energy Education in Elementary Science
Author: Mpls. Public Schools – writing team **Issue Date:** 1978
Suggested Grade Levels: K – 6
Suggested Subject Areas: science
Media Types: 2 packets, one to accompany SCIS materials, one to accompany ESS. Available separately.
Teacher Resource
Cost: free
Source: MN Energy Agency, Information and Education, 150 East Kellogg Blvd., St. Paul, MN 55101
Energy Topics: definitions and properties of energy, society's dependence on energy, possible solutions, Minnesota energy issues
Types of Activities: ESS unit includes several experiments; SCIS unit identifies activities already in SCIS units
Approaches: Both guides identify energy topics in existing curriculum materials. The ESS unit expands the existing units with several experiments which are similar in format to those in existing materials
Student Outcomes: Clearly Stated? No **Areas:** Cognitive
What Teacher Background is Assumed? These assume familiarity with the ESS or SCIS curriculum materials.
Other/General Comments: Both guides include outline of Energy Education Topics produced by Minnesota Dept. of Education, and key their matrices of topics in the units to this outline. They can provide teachers interested in energy with a fast way to locate energy-related concepts in existing materials.

Title: Energy Education in Elementary Social Studies
Author: Mpls. Public Schools – writing team **Issue Date:** 1979
Suggested Grade Levels: 1 – 6
Suggested Subject Areas: social studies
Media Types: 2 booklets, one to accompany *Windows on Our World* (Houghton Mifflin), one to accompany *Holt Databank System* (Holt, Rinehart & Winston) (available separately)
Teacher Resource
Cost: Free
Source: MN Energy Agency, Information and Education, 150 East Kellogg Blvd., St. Paul, MN 55101
Energy Topics: definitions and properties of energy, society's dependence on energy, possible solutions, Minnesota's energy issues
Types of Activities: 19 suggested activities are added. See "Approaches" below.
Approaches: These guides use an outline of Energy Education Topics developed by the Minnesota Department of Education to identify on a matrix the related units in the different curriculum sets, and annotates the references on the matrix.
Student Outcomes: Clearly Stated? No
What Teacher Background is Assumed? These assume familiarity with the principal curriculum materials being reviewed.
Other/General Comments: This provides a fast way for teachers interested in energy concepts to locate them in existing curriculum materials, and can help plan an integrated energy unit.

Title: Energy Education in the Home: An Energy Education/Conservation Curriculum Guide for Home Economics Teachers

Author: U of Tennessee Environmental Center College of Home Economics **Issue Date:** 1977/revision in 1980

Suggested Grade Levels: junior high and up

Suggested Subject Areas: home ec., consumer ed.

Media Types: 324 page loose-leaf packet

Teacher Resource

Cost: free

Source: ERDA Technical Information Center, P.O. Box 62, Oak Ridge, Tennessee 37830

Energy Topics: wise energy use and conservation in every phase of home life: cooking, clothes, shelter, etc.

Types of Activities: home survey, design problems, consumer comparison problems

Approaches: encourage awareness of and changes in lifestyle/energy consumption patterns

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none required, much is given; extensive reference lists

Other/General Comments: Despite recommending use of some questionable appliances (trash compactors and garbage disposals), this is a good comprehensive background manual on different areas of consumption/conservation through home ec./family living courses. Revision will be available in various segments or as a complete guide.

Title: Energy Education: The Mizer Series

Author: Bonnie Braun and Elaine Wilson **Issue Date:** 1978

Suggested Grade Levels: pre-school to grade 1

Suggested Subject Areas: science, interdisciplinary

Media Types: 51 looseleaf pages

Teacher Resource

Cost: $3.00

Source: Student Union Bookstore, Oklahoma State University, Stillwater, OK 74074

Energy Topics: energy definition, wind energy, solar energy, conservation

Types of Activities: games, puppetry, art activities, constructions, checklists

Approaches: links school or day care energy curriculum with homebased program by sending home prepared MIZER letters and activities bi-weekly

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none; detailed lesson plans include purpose, concept, skill, attitude, materials, procedure, and results

Other/General Comments: Well developed activities are appropriate for age group. There is excellent reinforcement of learning when activities are continued at home. The book is recommended for this age group.

ACTIVITIES

Title: Energy Environment Ethics Economics Curriculum Activity Guides

Author: Mary Theresa Webb and writing team **Issue Date:** 1979

Suggested Grade Levels: K – 12

Suggested Subject Areas: all subjects

Media Types: series of 18 individual activity guides

Teacher Resource

Cost: $1 each

Source: Conservation Consultants, 417 Thorn Street, Sewickley, PA 15143

Energy Topics: conservation, wind energy, energy transfer, solar

Types of Activities: wide range of student involved activities including meter reading, poetry, computations, experiments, and demonstrations

Approaches: individual activities are available for different grade levels, subjects, and energy concepts

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none; very complete lesson plan for each activity, including additional references and activity masters

Other/General Comments: This gives the teacher the option of purchasing activities to meet specific curriculum needs. Write the company for a descriptive listing of activity guides and other teacher aids.

Title. Energy, Food and You

Author: WA State Office of Public Instru. **Issue Date:** 1979

Suggested Grade Levels: K – 12

Suggested Subject Areas: all subjects

Media Types: 367 page elementary guide, 381 page secondary guide

Teacher Resource

Cost: $5.00/each

Source: Energy Food and You Program, Washington State Office of Environmental Education, c/o Shoreline School District, N.E. 158th and 20th Ave. N.E., Seattle, WA 98155

Energy Topics: global and individual food and energy use, marketing, land use, distribution, packaging, gardening, energy flows, conservation

Types of Activities: discussion, experiments, demonstrations, lists, surveys, class and individual projects

Approaches: This collection is strongly oriented toward conservation; it explores many factors dealing directly and indirectly with food production and related energy topics; arranged by concept, cross indexed by subject

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? not much needed; quite a bit of information is supplied, along with extensive references, diagrams, glossary, and bibliography

Other/General Comments: This is an excellent, well arranged collection of activities. It is highly recommended.

ACTIVITIES

Title: Energy for Today and Tomorrow (#1244)

Author: Learning staff **Issue Date:** 1977

Suggested Grade Levels: grades 1 – 6

Suggested Subject Areas: science

Media Types: two sided poster/game

Student Material; General Information

Cost: $2.20

Source: Learning, 530 University Avenue, Palo Alto, CA 94301

Energy Topics: conservation, solar energy

Types of Activities: game, solar cooker project

Approaches: "Solar Energy! Day and Night" on one side, "Pull the Plug" game on the other

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: The game is especially attractive for primary age students.

Title: Energy Futures

Author: Donald Parr **Issue Date:** 1976

Suggested Grade Levels: junior high

Suggested Subject Areas: science

Media Types: short booklet

Teacher Resource

Cost: $3.00

Source: Highline Public Schools, Project Ecology, P.O. Box 66100, Seattle, Washington 98166

Energy Topics: use, types, transfer, conservation, futures

Types of Activities: lab experiments, surveys, math, meter reading, discussions, library research

Approaches: this does a nice job of interspersing experiments and projects with discussion of concepts about the nature of energy and man's use of energy

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? a junior high school science teaching background is assumed for setting up some experiments and answering anticipated questions

Other/General Comments: This is a good booklet, hampered slightly by being only part of a materials pack from the above-noted schools. Most of the classroom equipment noted, however, is easily available. Although some discussions are specific to Washington, this is well worth looking over.

ACTIVITIES

Title: Energy Learning Center

Author: Communications and Education Group **Issue Date:** 1980

Suggested Grade Levels: 6 – 8

Suggested Subject Areas: science, language arts

Media Types: kit with 18 fact sheets, 6 duplicating masters, teacher's guide

Teacher Resource

Cost: free

Source: Chevron USA Inc., 595 Market Street, San Francisco, CA 94105

Energy Topics: energy sources, history of energy, environmental consequences of energy choices, conservation

Types of Activities: language arts activities (research, letterwriting, etc.), observations, timelines, discussions, interviews

Approaches: definitely pro-fossil fuels, presents broad overview of energy

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? none, glossary and bibliography included in the teacher's guide

Other/General Comments: This is an interesting collection of materials that introduces the major energy topics and the process for researching them further.

Title: Energy Management Game

Author: Biological Sciences Curriculum Study **Issue Date:** 1977

Suggested Grade Levels: high school to adult

Suggested Subject Areas: social studies, economics, futures

Media Types: game with game board, pieces for 4-6 players

Student Material

Cost: $35.00

Source: Hubbard, P.O. Box 104, Northbrook, Ill. 60062

Energy Topics: electric energy supply, demand, cost, policy making

Types of Activities: board game that involves predicting and manipulating energy supply, demand, and policies

Approaches: Players all act the part of electric utility heads, and make group and individual decisions while trying to reduce demand, increase supply, and make money.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? not much assumed

Other/General Comments: The game provides an interesting look at problems of supplying power.

Title: Energy Management Strategies for Colorado Home Economics Teachers

Author: Writing Team **Issue Date:** 1979

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: home economics, child development

Media Types: unpaged book of lesson plans

Teacher Resource

Cost: $6.00

Source: Dr. Wiley Lewis, Curriculum Specialist, Department of Vocational Education, Colorado State University, Fort Collins, Colorado 80523

Energy Topics: conservation, energy consumption rates, energy uses

Types of Activities: wide range of activities including games, discussions, constructions, role playing, experiments

Approaches: lesson plans for home economics related energy activities, compilation of available material in the subject area, plus writing new materials to strengthen weak content areas

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? most appropriate for home economics teacher; resources listed for each section of units, as well as for some individual activities; background information supplied for units

Other/General Comments: The book contains well organized and well developed activities relating to Food and Nutrition, Clothing and Textiles, Housing and Home Furnishing, Child Development, and Personal and Family Relations.

Title: Energy! Our Responsible Use of It

Author: Bev Lillquist **Issue Date:** 1979

Suggested Grade Levels: grades 2 – 4

Suggested Subject Areas: social studies, science

Media Types: 43 page booklet

Teacher Resource

Cost: free

Source: University of Minnesota Center for Economic Education, 1169 Business Administration Building, 271 19th Avenue South, Minneapolis, MN 55455

Energy Topics: conservation, fossil fuels, solar and wind power, energy consumption rates

Types of Activities: surveys, experiments, data collection

Approaches: economic implications of energy decisions, sequential activities could be taught as a unit or used to supplement existing curriculum

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none, list of reference materials used

Other/General Comments: This is an interesting collection of activities appropriate for the designated grade levels.

ACTIVITIES

Title: Energy Packet

Author: Massachusetts Audubon Society **Issue Date:** 1974

Suggested Grade Levels: upper elementary – jr. high

Suggested Subject Areas: science, social studies, general info.

Media Types: packet with several copies of *Curious Naturalist,* pamphlets, reprints

Teacher Resource; Student Material

Cost: $5.00

Source: Massachusetts Audubon Society, Lincoln, MA 01773

Energy Topics: food energy, energy in nature, fossil fuels, future choices

Types of Activities: simple experiments

Approaches: The articles can be used separately or in a sequence to give a good overview of energy basics. In sections dealing with nuclear, the problems are emphasized.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? several pieces of background reading, plus bibliographies, are provided for the teacher

Other/General Comments: This is a good, useful package. Concepts are well stated. Some groups may have trouble reading the articles, and need teacher's help. Energy bibliographies included are somewhat dated (1974).

Title: Energy: Science World Visuals 3

Author: Dr. Theodore Benjamin/Carl Proujan **Issue Date:** 1974

Suggested Grade Levels: high school

Suggested Subject Areas: physical sciences, industrial arts

Media Types: 8 sets of paired transparencies, 8 spirit masters, brief teacher's guide

Teacher Resource; Student Material

Cost: $13.50

Source: Scholastic Book Services, Four Winds Press, 50 West 44th, New York, NY 10036

Energy Topics: inertia, energy conversions, solar energy, friction burning

Types of Activities: problem solving—math and logic

Approaches: the top transparency (and corresponding spirit master) in each set poses a problem; the second transparency overlay has the solution; further questions are suggested in teacher's guide

Student Outcomes: Clearly Stated? No **Areas:** Cognitive

What Teacher Background is Assumed? some background is given with each problem, but they do assume background knowledge on most topics

Other/General Comments: These look like good additions to different units. Solving the problems demands some understanding of the concepts rather than just simple math.

ACTIVITIES

Title: The Energy Show

Author: Anne Garde and Angie Leprohon **Issue Date:** 1978

Suggested Grade Levels: junior high – senior high

Suggested Subject Areas: language arts, drama

Media Types: play script

Student Material

Cost: $3.30

Source: The New Western Energy Show, 226 Power Block, Helena, Montana 59601

Energy Topics: fossil fuels, alternative energy sources, nuclear power, conservation

Types of Activities: energy play, complete with set description, stage direction, character roles, and music

Approaches: clearly anti-nuclear and critical of fossil fuels' negative impact on the environment, a lot of energy information is presented in a manner that will be remembered by those watching the play

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none, except to recognize the biases presented

Other/General Comments: This would be appealing both to the students presenting the play and to those watching and participating. It could be understood by those as young as fourth grade. Theater is an interesting medium for developing energy topics.

Title: Energy Sources/SCIIS

Author: Staff Writers **Issue Date:** 1978

Suggested Grade Levels: grade 5

Suggested Subject Areas: science

Media Types: kit module (physical materials, student manuals, activity cards, printed materials, evaluation packets, and teacher's guide)

Teacher Resource; Student Material

Cost: $323.00

Source: Rand McNally & Company, School Department, Box 7600, Chicago, IL 60680

Energy Topics: energy source, energy transfer, and energy receiver

Types of Activities: wide range of experiments stressing the discovery method

Approaches: emphasis on physical science aspects of energy, process-oriented approach

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none, complete teacher's guide provided

Other/General Comments: The format provides students with background for understanding and applying the principle of conservation of energy. It does not cover the sources of energy such as fossil fuels or wind.

Title: Energy X

Author: Norman S. Warns, Jr. **Issue Date:** 1974

Suggested Grade Levels: high school and above

Suggested Subject Areas: social studies, economics, geography, science, values

Media Types: simulation game kit, filmstrip, cassette, worksheets, background sheets

Teacher Resource; Student Material

Cost: $22.95

Source: Ideal School Supply Co., Oak Lawn, Illinois 60453

Energy Topics: use, priorities

Types of Activities: simulation game in which students are asked to decide where to distribute a (mythical) source of energy, choosing three out of eight regions of the U.S.

Approaches: background information is given on each region (manufacturing, agriculture, population, energy use, etc.); students chosen to represent each region explain which regions deserve new source; a student panel decides

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive; Affective

What Teacher Background is Assumed? none assumed; some back-up information on where different regions get their electric power is needed; teacher should be able to moderate intense values discussion

Other/General Comments: This is an interesting simulation. No mention in background is is made of lifestyles, but this could come up in discussion. The teacher should read very carefully and decide what supplementary materials would be necessary to expand beyond the limited data the game provides for student decision making.

Title: The Environment: Activities and Explorations: Unit Six: Understanding Our Energy Needs

Author: David Brenchly & John Tower **Issue Date:** 1975

Suggested Grade Levels: jr. – sr. high

Suggested Subject Areas: social studies, American studies, futures, science

Media Types: ditto master package, teacher guide, resource handbook

Teacher Resource

Cost: $23.40

Source: Houghton-Mifflin Co., 1900 S. Batavia Avenue, Geneva, Illinois 60134

Energy Topics: use, conservation, policy, nature of energy

Types of Activities: surveys, discussion questions

Approaches: emphasizes looking at life-styles, value choices, and how these influence energy uses and policies

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? Teacher guide contains much background information plus suggested resources.

Other/General Comments: This set concentrates on discussion questions and problems, some of which are very well put.

ACTIVITIES

Title: Environmental Concerns: The Nation/Environmental Concerns: The World

Author: Carnegie-Mellon University & W. Penn. **Issue Date:** 1977

Suggested Grade Levels: grades 9 – 12

Suggested Subject Areas: social studies, environmental education

Media Types: 122 page softcover book/166 page softcover book

Student Material

Cost: $4.50 each

Source: Harcourt, Brace, and Jovanovich, 757 Third Avenue, New York, N.Y. 10017

Energy Topics: oil drilling, coal strip mining, recycling, energy consumption rates

Types of Activities: discussions, data gathering, group actions such as cleaning up a neighborhood or publishing a newsletter

Approaches: focuses on the environment and considers energy choices and decisions within that framework, series of case studies are cited, along with suggested discussion questions and activities

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none, teacher's manual for each book

Other/General Comments: The process guides students to rationally evaluate environmental choices. Social studies teachers should review these books for their worth as a core curriculum or as supplementary material.

Title: Environmental Education/Driver Education

Author: Minnesota Department of Education **Issue Date:** 1976

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: driver education

Media Types: folder of activities

Teacher Resource

Cost: free

Source: Environmental Education Specialist, Minnesota State Department of Education, Capitol Square, 550 Cedar St., St. Paul, MN 55101

Energy Topics: conservation, mass transit, consumption rates

Types of Activities: computations, discussions, valuing exercises

Approaches: set of 8 environmental education activities for driver education, some of which relate to energy education

Student Outcomes: Clearly Stated? No **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none, should have current information available (see other)

Other/General Comments: Cost figures for gasoline and cars need to be adjusted, along with updating mpg ratings. Use selectively to introduce energy education into driver education.

Title: Experiments from Edison (series)

Author: Ronald Benray, Robert Schultz **Issue Date:** 1970-1978

Suggested Grade Levels: 5 – senior high (varies)

Suggested Subject Areas: physical sciences, industrial arts, some earth science

Media Types: 8 unsequenced pamphlets

Student Material

Cost: 50¢ and coupon from the address below

Source: Charles Edison Fund, 101 S. Harrison Street, East Orange, NJ 07018

Energy Topics: building different circuits, simple experiments, environmental observations, nuclear energy, conservation, alternative energy sources

Types of Activities: simple lab experiments

Approaches. observation and experimentation with lots of simple activities

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? varies; for many, some basic familiarity with elementary physical sciences would help in setting up the labs

Other/General Comments: This is a very good series of experiment pamphlets. Titles include: "Nuclear Experiments," "Electrical and Chemical Experiments," "Edison Experiments," "Energy Conservation Experiments You Can Do," "Edison–the Man Who Turned Darkness Into Light," "Selected Experiments and Projects," and "Alternative Energy Sources Experiments You Can Do".

Title: Everyday Conservation

Author: Instructor Curriculum Materials **Issue Date:** 1977

Suggested Grade Levels: 1 – 6

Suggested Subject Areas: general information

Media Types: 8 posters, set of activity cards

Student Material

Cost: $5.95

Source: Instructor Publications, Dansville, NY 14437

Energy Topics: conservation habits

Types of Activities: short projects derived from posters

Approaches: Each poster shows a specific conservation habit, such as keeping heat low, and has an activity card referring to it.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none assumed

Other/General Comments: The posters could be used well in a unit on energy. The energy conservation topics include recycling, food waste, water use, electricity and personal belongings.

ACTIVITIES

Title: Exploring Alternative Energy Systems

Author: Dr. Allen Anway, Dr. Myron Schneiderwent, William Overn **Issue Date:** 1978

Suggested Grade Levels: high school

Suggested Subject Areas: physics, industrial arts

Media Types: book of lesson plans that goes with various experimental equipment

Student Material

Cost: $6.95

Source: Technical Systems, Inc., 2256 Terminal Rd., St. Paul, MN 55113

Energy Topics: thermal, solar electric, water, wind, chemical

Types of Activities: Each of the topics noted above has a module of equipment for various experiments.

Approaches: The book has specific problems and instructions for the student and accompanies equipment sold by T.S.I.

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? familiarity with principles of physical science, and lab supervision

Other/General Comments: These models offer a good way for students to become familiar with principles behind various alternative sources of energy.

Title: Exploring with Solar Energy

Author: Thomas H. Metos & Gary G. Bitter **Issue Date:** 1978

Suggested Grade Levels: grade 5 – jr. high

Suggested Subject Areas: science, general information

Media Types: 64 page book

Student Material

Source: Simon & Schuster, 1 West 39 Street, New York, N.Y. 10018

Energy Topics: general principles of solar energy

Types of Activities: several experiments

Approaches: gives some background and leads up to several simple experiments

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? no special background is assumed

Other/General Comments: General experiments are quite good. However, the teacher should emphasize great caution for those using Fresnel lens. Students should handle materials with tongs, not hands, as is shown in picture.

ACTIVITIES

Title: Fuel Conservation Unit for Traffic Safety Education (I Love My Car)

Author: Claire Dyckman **Issue Date:** 1978

Suggested Grade Levels: senior high

Suggested Subject Areas: driver education, math

Media Types: 90 looseleaf pages

Teacher Resource

Cost: free

Source: Washington State Office of Environmental Education, c/o Shoreline District Offices, NE 158th & 20th Ave. NE, Seattle, WA 98155

Energy Topics: fuel conservation

Types of Activities: computation, surveys, discussions, values clarification

Approaches: wide variety of activities that promote fuel conservation and wise driving practices

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none; glossary, bibliography, and overlay masters included

Other/General Comments: Materials can be used as teacher - directed class activities or for independent student use. Emphasis is placed on driving values and attitudes.

Title: Get Your Hands on Energy: A Teaching Guide About Renewable Energy and Conservation

Author: Shaun Taylor, Maureen Shaughnessy and Robin Leenhouts **Issue Date:** 1979

Suggested Grade Levels: elementary – junior high

Suggested Subject Areas: science, interdisciplinary approach

Media Types: 106 notebook pages

Teacher Resource

Cost: $5.65

Source: The New Western Energy Show, 226 Power Block, Helena, Montana 59601

Energy Topics: conservation, renewable energy

Types of Activities: wide range of student oriented activities

Approaches: collection of interdisciplinary activities focusing on fifteen topics (ex. preserving food, what's in a package)

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none; concepts are outlined for each topic, along with an introduction to the topic; bibliography included

Other/General Comments: This is an interesting collection of activities presented in a well organized manner. It is ungraded but activities are available for kindergarten through junior high and for almost all subject areas, including art, history, drama, and literature.

ACTIVITIES

Title: The Great Allegheny County Energy-Saver's Cookbook

Author: Project Pacesetter **Issue Date:** 1979

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: home economics

Media Types: 204 page spiral bound cookbook

General Information

Cost: $5.95

Source: Project Pacesetter, 1220 Park Bldg., 355 Fifth Avenue, Pittsburgh, PA 15222

Energy Topics: Conservation

Types of Activities: cooking

Approaches: stresses creative energy-saving cooking

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? none

Other/General Comments: Energy-saving recipes, energy efficiency of appliances, food storage, and general energy saving measures in the kitchen are covered.

Title: Handbook of Energy Lesson Plans (H.E.L.P.)

Author: The Cooper Solar Group Companies **Issue Date:** 1977

Suggested Grade Levels: 4 – college

Suggested Subject Areas: science, industrial arts

Media Types: 4 notebooks: Elementary, Jr. High, Sr. High, College

Teacher Resource

Cost: $3/notebook

Source: The Cooper Solar Group Companies, 1627 Litchfield Turnpike, P.O. Drawer X, Woodbridge, CT 06525

Energy Topics: principles of solar energy and use

Types of Activities: experiment, discussion

Approaches: uses experiments and step-by-step calculations to explain solar principles

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? experience in setting up and supervising science labs

Other/General Comments: This is an interesting set of experiments. Some of those designated for lower grades may be more appropriate for later grades.

ACTIVITIES

Title: Heatloss

Author: MN Dept. of Education **Issue Date:** 1978

Suggested Grade Levels: junior high and up

Suggested Subject Areas: science

Media Types: 22 page book

Student Material

Cost: free

Source: Dept. of Education, Science Specialist, 550 Cedar Street, St. Paul, Minn. 55101

Energy Topics: home insulation, heatloss

Types of Activities: students assess their homes, step by step, for insulation and heat loss problems

Approaches: Information gathered by each student is fed into the MECC computer network, which then tells how each part of the house loses or conserves energy.

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? not much

Other/General Comments: This is a good, step-by-step way of looking at a house to assess it and analyze problems. It's easy to use and has an attractive format.

Title: Home Sweet Earth; Project Ecology

Author: Highline Public Schools **Issue Date:** 1975

Suggested Grade Levels: K – 3

Suggested Subject Areas: interdisciplinary

Media Types: short booklet

Teacher Resource

Cost: $3.00

Source: Project Ecology, Highline Public Schools, Dept. of Instruction, P.O. Box 66100, Seattle, WA 98166

Energy Topics: nature of energy, need for energy, the sun

Types of Activities: walks, discussions, art projects, simple experiments

Approaches: several activities are arranged around each of ten different concepts; activities are generally open-ended; ordered in a suggested sequence

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? none assumed; support materials are suggested in each lesson

Other/General Comments: These are good introductory ideas. About one third deal directly with energy topics.

ACTIVITIES

Title: Household Energy

Author: Ginn & Company **Issue Date:** 1976

Suggested Grade Levels: junior high and up

Suggested Subject Areas: phy. sciences, some activities also home economics

Media Types: 196 page booklet and teacher's guide

Teacher Resource; Student Material

Cost: $2.90/student booklet; $4.60/annotated teacher's edition

Source: Ginn & Company, P.O. Box 2649, Columbus, Ohio 43216

Energy Topics: use, conversion, measuring, in lab and home

Types of Activities: problems, lab experiments

Approaches: has a lot of consumer economics, how to decipher costs and make decisions

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? none, has good simple explanations and pictures

Other/General Comments: This is a very good source of activities dealing with elementary energy properties, measurements, etc.

Title: The Household Energy Game

Author: Thomas W. Smith/John Jenkins **Issue Date:** 1974

Suggested Grade Levels: junior high and up

Suggested Subject Areas: general, home economics/consumer education

Media Types: 20 page pamphlet

General Information

Cost: $.10

Source: Sea Grant Communication Office, 1800 University Avenue, Madison, WS 53706

Energy Topics: energy use and conservation in the home

Types of Activities: making up an energy budget and improving it

Approaches: game-board type grid is laid out to help estimate amounts of energy used; some background information is given

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is simply a step-by-step look at where families use energy. It could be a useful tool.

ACTIVITIES

Title: The Hydrocarbon Civilization

Author: MN Environmental Sciences Foundation **Issue Date:** 1975

Suggested Grade Levels: high school and up

Suggested Subject Areas: interdisciplinary (futures, social studies, science)

Media Types: folder of activities

Teacher Resource

Cost: $5.00

Source: Minnesota Environmental Sciences Foundation, 5430 Glenwood Avenue, Minneapolis, MN 55422

Energy Topics: sources, futures, attitudes, decision-making

Types of Activities: discussions, role-playing, attitude survey, predicting

Approaches: this packet of open-ended activities emphasizes decision-making, evaluation, and analysis processes

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? because the materials concentrate more on discussions and analyzing energy problems and futures, teacher would probably want background information on supply, demand, etc.

Other/General Comments: This set contains some good, thought-provoking activities.

Title: Ideas and Activities for Teaching Energy Conservation

Author: U of Tennessee Environment Center **Issue Date:** 1977

Suggested Grade Levels: 7 – 12

Suggested Subject Areas: social studies, science, language arts, interdisciplinary

Media Types: 225 page booklet

Teacher Resource

Cost: free

Source: Tennessee Energy Office, Suite 250 Capitol Hill, Nashville, Tennessee 37219

Energy Topics: conservation, use, sources

Types of Activities: library research, discussion, surveys, field trips, class projects

Approaches: each activity centers on a concept followed by a brief explanation; activities, in general, are just lists of questions for students to look up and discuss, promotes conservation ethic and lifestyle change

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? varies with activity; an introductory background section with references is provided

Other/General Comments: The background sections are good; the separation into different concepts is good; the bibliography is very good; but the activities are too similar in format (discuss, research) for all disciplines.

ACTIVITIES

Title: Industrial Arts Manual to the Construction of Miniaturized Alternative Energy Source Equipment

Author: Thomas J. Reisdorph **Issue Date:** 1978

Suggested Grade Levels: junior high – senior high – vocational school

Suggested Subject Areas: industrial arts

Media Types: 43 looseleaf pages; blueprints; photographs

Teacher Resource

Cost: $12.00

Source: Energy Management Center, P.O. Box 190, Port Richey, FL 33568

Energy Topics: alternative energy source equipment

Types of Activities: constructions

Approaches: plans presented for solar water heater, parabolic solar furnace, silicon cell demonstration, Fresnel lens, windcharger, Savonius rotor, Mitchell-Banki hydroturbine, and electric circuit lab kit; constructions of conventional equipment

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? must be experienced with blueprint reading and construction skills or be an industrial arts teacher

Other/General Comments: This contains extremely detailed blueprints, along with part lists, and instructions for use when completed. Models serve to illustrate alternative energy source equipment to other students studying energy sources. Use them selectively. Great care should be taken regarding safety with Fresnel lens, freon, and the rotating wind charger.

Title: Interdisciplinary Student/Teacher Materials in Energy, The Environment and the Economy

Author: National Science Teachers Assn. **Issue Date:** 1977-80

Suggested Grade Levels: K – 12 (separate units) (see Other)

Suggested Subject Areas: science, social studies, math

Media Types: booklets

Teacher Resource

Cost: free

Source: U.S. Department of Energy, Technical Information Office, P.O. Box 62, Oak Ridge, Tennessee 37830

Energy Topics: transportation, energy use, energy policy, politics, conservation, energy conversion

Types of Activities: surveys, labs, discussion, role-playing

Approaches: materials are interdisciplinary

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? varies with the unit

Other/General Comments: The NSTA is putting out many interdisciplinary units on energy, by grade level. Different units are available in different stages—some finished, some draft copies. Write for information on what's currently available for your grade or subject area.

ACTIVITIES

Title: Introduction to Energy

Author: Fred Posthurna **Issue Date:** 1978

Suggested Grade Levels: secondary

Suggested Subject Areas: industrial arts, general minicourse on energy

Media Types: 90 page book, booklet of duplicating master patterns

Teacher Resource

Cost: $6.50

Source: Wisconsin Vocational Studies Center, 964 Education Sciences Building, 1025 W. Johnson St., Madison, WI 53706

Energy Topics: supply, sources, demand, environmental problems, use

Types of Activities: worksheets, with hands-on activities suggested in a general list at the end

Approaches: gives lesson plan outlines for an energy course which concentrates on giving general background

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? very little assumed

Other/General Comments: Worksheet patterns were taken from "The Energy Challenge". Though the author says the book is for industrial arts, its concentration on giving background information, with few activities, would make it appropriate for other disciplines.

Title: It's Your Environment: Things to Think About – Things to Do

Author: Sherry Koehler, editor **Issue Date:** 1976

Suggested Grade Levels: elementary – junior high

Suggested Subject Areas: science, social studies

Media Types: 218 page hardcover book

Teacher Resource

Cost: $7.95

Source: Environmental Action Coalition, 156 5th Avenue, Suite 1130, New York, NY 10010

Energy Topics: recycling, conservation, definition of energy, fossil fuels, energy sources

Types of Activities: wide range of activities including experiments, discussion questions, projects and surveys

Approaches: approaches wide range of urban topics such as transportation, climate, energy, and gardening from an environmental viewpoint

Student Outcomes: Clearly Stated? No **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none

Other/General Comments: This is an interesting book that combines background information with activities on topics that concern children. It is recommended for use by teachers in urban schools.

ACTIVITIES

Title: Living with Energy

Author: Standard Oil Co. (Indiana) **Issue Date:** 1976

Suggested Grade Levels: high school and up

Suggested Subject Areas: social studies, science, American values

Media Types: five spirit masters, teacher's guide

Student Material

Cost: $1.00

Source: Amoco Teaching Aids, P.O. Box 1400-K, Dayton, OH 45414

Energy Topics: use, supply, sources

Types of Activities: discussion, lists, interviews, simulation game

Approaches: open-ended discussions are encouraged, interspersed with a few facts and figures on energy use

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? because this is a very short packet, a teacher would probably need additional material

Other/General Comments: This could be a useful supplement to an energy unit. A film by the same title is available from Modern Talking Pictures; this packet, however, can be used without it.

Title: Make Your Own Alternative Energy

Author: Richard Cummings **Issue Date:** 1979

Suggested Grade Levels: grade 5 – senior high (varies for activities)

Suggested Subject Areas: industrial arts, all subjects

Media Types: 154 pages hardcover book

General Information

Cost: $8.95

Source: National Audubon Society, 950 3rd Avenue, New York, NY 10022

Energy Topics: solar, water, and wind power; nuclear energy, aquaculture system, wood-burning, methane digester

Types of Activities: constructions, experiments

Approaches: positive approach to alternative energy, points out mainly negative aspects of nuclear power, combines activities with background information

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? depends upon the activity, varies from none to specialized construction skills

Other/General Comments: This is an interesting collection of alternative energy activities; it is best used as a reference from which to selectively choose appropriate activities. Use caution with Fresnel lens, methane digester, and models with moving or extremely hot parts.

ACTIVITIES

Title: Minnesota Energy Activities for Elementary Students
Author: Minnesota Dept. of Education/MN Energy Agency **Issue Date:** Fall, 1980
Suggested Grade Levels: K – 6
Suggested Subject Areas: interdisciplinary
Media Types: set of 7 activity folders, one per grade level
Teacher Resource
Cost: free
Source: Gilbert Valdez, Supervisor of Curriculum Dev., 650 Capitol Square Building, St. Paul, MN 55101
Energy Topics: different energy principle developed for each grade level
Types of Activities: wide range of activities including experiments, constructions, debates, displays, map studies, interviews, and researching energy topics
Approaches: units could be used in their entirety as an energy unit, selectively used to develop an energy unit, or infused into existing cirriculum as the teacher sees fit
Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective
What Teacher Background is Assumed? none, teacher background information provided for each activity card
Other/General Comments: Scope and sequence are provided for the entire series within each grade level. Each card provides a complete lesson plan)principal concept, objective, skills, materials, procedure, extension, and background).

Title: Minnesota Energy Learning Modules/Industrial Arts
Author: MN Dept. of Education, MN Energy Agency, MN Environmental Education Board **Issue Date:** Fall, 1980
Suggested Grade Levels: Junior – senior high
Suggested Subject Areas: industrial arts
Media Types: set of 15 learning modules
Teacher Resource
Cost: free
Source: Industrial Education Supervisor, Minnesota State Department of Education, Capitol Square, 550 Cedar Street, St. Paul, MN 55101
Energy Topics: solar collectors, temperature sensing devices, energy efficient houses, insulation, greenhouses, pedal power, heat exchangers, gasohol, Savonius rotor, recycling
Types of Activities: constructions, comparison tests, drawing
Approaches: hands-on activities that involve students in energy related projects
Student Outcomes: Clearly Stated? No **Areas:** Cognitive
What Teacher Background is Assumed? should have the skills required of an industrial arts teacher, resources listed for some modules, format varies and requires differing amounts of teacher input, selected modules are technical in nature.
Other/General Comments: The activities focus on different areas of industrial arts such as wood, metals, architectural drafting, electronics, and general junior high industrial arts; not the "standard" type of activities found in textbooks.

ACTIVITIES

Title: Minnesota Energy Resource Units/Home Economics

Author: MN Dept. of Ed., MN Energy Agency **Issue Date:** Fall, 1980
MN Environmental Education Board

Suggested Grade Levels: range from junior – senior high

Suggested Subject Areas: home economics

Media Types: set of 12 activities

Teacher Resource

Cost: free

Source: Home Economics Supervisor, Minnesota State Department of Education, Capitol Square, 550 Cedar Street, St. Paul, MN 55101

Energy Topics: conservation, energy use, energy choices

Types of Activities: discussions, experiments, menu planning, sewing projects, role playing, valuing exercises

Approaches: open-ended problem solving and responsible decision making processes are stressed in the activities

Student Outcomes: **Clearly Stated?** No **Areas:** Cognitive, Affective

What Teacher Background is Assumed? experienced home economics teacher due to the open-ended approach; resources suggested for most activities

Other/General Comments: This is an interesting collection of "unconventional" home economics activities.

Title: Minnesota Energy Resource Units/Science

Author: MN Dept. of Ed., MN Energy Agency, **Issue Date:** Fall, 1980
MN Environmental Education Board

Suggested Grade Levels: range from junior high – senior high

Suggested Subject Areas: science (relate to various areas)

Media Types: set of resource units

Teacher Resource

Cost: free

Source: Science Specialist, Minnesota State Department of Education, Capitol Square, 550 Cedar Street, St. Paul, MN 55101

Energy Topics: energy transfer, energy source and receiver, solar energy, differential thermal expansion, energy cells

Types of Activities: experiments, discussions, constructions

Approaches: emphasis placed upon the skills involved in creative problem solving

Student Outcomes: **Clearly Stated?** No **Areas:** Cognitive, Affective

What Teacher Background is Assumed? experience as science teacher; resources included for each activity packet; amount of background needed varies with activities

Other/General Comments: These are "non-conventional" science activities relating to energy. Each activity packet stands on its own. It can be used to infuse energy education into existing science curriculum.

ACTIVITIES

Title: Minnesota Energy Resource Units/Social Studies

Author: MN Dept. of Ed., MN Energy Agency, MN Environmental Education Board **Issue Date:** Fall, 1980

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: social studies

Media Types: series of activity packets

Teacher Resource

Cost: free

Source: Social Studies Specialist, Minnesota State Department of Education, Capitol Square, 550 Cedar Street, St. Paul, MN 55101

Energy Topics: conservation, energy policy, energy options

Types of Activities: research, discussion, valuing exercises, brainstorming, decision-making, writing, simulations

Approaches: open-ended activities that relate energy topics to social studies concepts and processes

Student Outcomes: Clearly Stated? No **Areas:** Cognitive, Affective

What Teacher Background is Assumed? assumes social studies teaching background due to the teaching strategies suggested, resources listed for most activities

Other/General Comments: Use selectively to implement energy education in social studies curriculum.

Title: Natural Gas Serves Our Community

Author: American Gas Co. **Issue Date:** 1976

Suggested Grade Levels: two versions: grades 1 – 3 and 4 – 6

Suggested Subject Areas: science, social studies

Media Types: kit containing cutout pictures and booklet

Student Material

Cost: $2.00 each

Source: American Gas Association, Educational Services, 1515 Wilson Blvd., Arlington, VA 22209 or local gas company

Energy Topics: natural gas

Types of Activities: sequencing of cutouts

Approaches: visual representation of the various steps in the process of moving natural gas from the ground to the users; text provides additional information

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none required? would be interesting to have further information from local gas company regarding sources of gas, transportation systems used, and major users

Other/General Comments: These are appropriate materials for conveying the background information on how natural gas serves its users.

Title: Of Democracy, Truth, and Courage

Author: Thomas Tanner **Issue Date:** 1979

Suggested Grade Levels: senior high

Suggested Subject Areas: social studies, science

Media Types: 76 page spiral notebook/teacher; 67 spirit masters/student

Teacher Resource; Student Material

Cost: $24.95

Source: National Audubon Society, Educational Services, 950 Third Avenue, New York, NY 10022

Energy Topics: nuclear power

Types of Activities: discussion, research, simulation

Approaches: concept of responsible citizen action making democracy work is developed through case studies

Student Outcomes: Areas: Cognitive, Affective

What Teacher Background is Assumed? none, numerous references are cited for each case study

Other/General Comments: The process of researching case studies could be applied to other controversial energy issues and how they relate to the environment.

Title: Pedal Power: In Work, Leisure, and Transportation

Author: James C. McCullagh, ed. **Issue Date:** 1977

Suggested Grade Levels: upper elementary (pictures), junior and senior high

Suggested Subject Areas: industrial arts (metal), general information

Media Types: 133 page paperback

General Information

Cost: $4.95

Source: Rodale Press, 33 E. Minor Street, Emmaus, PA 18049

Energy Topics: appropriate technology, pedal power

Types of Activities: construction plans for a multi-use energy cycle

Approaches: descriptive treatment of the history of pedal power with an optimistic outlook for its potential in the future

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? construction skills needed to make an energy cycle; none assumed for the remainder of the text; bibliography included

Other/General Comments: The book contains interesting applications of pedal power; photographs and diagrams are well done.

ACTIVITIES

Title: The Powerline Protest! Short Stories in Law Education

Author: Robert J. Rader, John and Linda Thorstad **Issue Date:** 1979

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: social studies, reading

Media Types: 39 page booklet

Student Material

Cost: $3.75

Source: Paul S. Amidon & Associates, Inc., 1966 Benson Avenue, St. Paul, MN 55116

Energy Topics: powerlines

Types of Activities: discussion, reading skills, questions

Approaches: fictional short story focuses on the controversial issue of power lines with the reader needing to identify whether the protester is innocent or guilty

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none

Other/General Comments: This could be the basis for research on the current status of the powerline debate. It would be interesting to investigate environmental mediation and examine its possible impact on the powerline problem. The book gives an interesting approach to a controversial energy issue.

Title: Practical Sun Power

Author: Wm H. Rankins III, David A. Wilson **Issue Date:** 1974

Suggested Grade Levels: high school, adult

Suggested Subject Areas: industrial arts, general information

Media Types: 52 page booklet

General Information

Cost: $4.00

Source: Lorien House, P.O. Box 1112, Black Mtn, NC 28711

Energy Topics: solar projects with principles of why they work

Types of Activities: plans for solar oven, solar cooker, hot water heaters, solar collectors, and other smaller projects

Approaches: gives detailed directions on building different projects

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? some familiarity with working with tools

Other/General Comments: These are good, hands-on projects.

ACTIVITIES

Title: Price Changes in the Energy Marketplace

Author: Mpls. Public Schools – writing team **Issue Date:** 1978

Suggested Grade Levels: grades 9 – 12

Suggested Subject Areas: social studies (economics)

Media Types: 22 page booklet

Teacher Resource; Student Material

Cost: free

Source: University of Minnesota Center for Economic Education, 1169 Business Administration Building, 271 19th Avenue South, Minneapolis, MN 55455

Energy Topics: conservation, natural gas

Types of Activities: discussions, oral presentations, directed reading, emphasis on group decision-making process

Approaches: case study of the economic impact of energy decisions, focusing on a Minnegasco rate change

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive, Affective

What Teacher Background is Assumed? none, student evaluation instruments and a glossary included

Other/General Comments: This is a well structured case study that teaches the process as well as the content.

Title: Putting the Sun to Work

Author: Jeanne Bendick **Issue Date:** 1979

Suggested Grade Levels: 3 – 6

Suggested Subject Areas: general interest, science

Media Types: 64 page book

Student Material

Cost: $4.74

Source: Garrard Publishing Co., 107 Cherry Street, New Canaan, Ct. 06840

Energy Topics: principles of solar energy

Types of Activities: some simple experiments

Approaches: optimistic review of solar energy

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none assumed

Other/General Comments: This gives a good introduction to solar; it contains many complex ideas stated briefly; teacher help may be needed on some of these concepts.

ACTIVITIES

Title: Rain Posters: Urban Ecotopia, Suburban Ecotopia

Author: Diane Schatz, illustrator **Issue Date:** 1976

Suggested Grade Levels: grades K – 12, adults

Suggested Subject Areas: general information

Media Types: posters (21" x 24" – 22" x 33")

General Information

Cost: $3.00 each

Source: Rain Publishing, 2270 NW Irving, Portland, Oregon 97210

Energy Topics: self-reliance, appropriate technology, alternative energy sources

Types of Activities: coloring

Approaches: line drawings are rich in detail; low technology is emphasized

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: These could serve as a stimulus for discussion or drawing activity; the drawings are very well done.

Title: Recyclopedia

Author: Robin Simons **Issue Date:** 1976

Suggested Grade Levels: K – 12

Suggested Subject Areas: science, art, home economics, language arts

Media Types: 118 page hardcover book

Teacher Resource; Student Material

Cost: $7.95

Source: Houghton Mifflin, 1900 S. Batavia Ave., Geneva, IL 60134

Energy Topics: projects and crafts using recycled materials

Types of Activities: all sorts of experiments, games and projects

Approaches: This came out of a project at the Boston Children's Museum, and encourages creativity with discarded materials.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none assumed

Other/General Comments: Though the focus of the book is not really energy, there are many delightful projects which can be done with recycled materials, and can be related to energy and materials waste.

ACTIVITIES

Title: Save Energy and Have Fun with Textiles

Author: American Textile Manufacturing Institute **Issue Date:** 1977

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: home economics

Media Types: 36 page booklet

General Information

Cost: free

Source: American Textile Manufacturing Institute, 1101 Connecticut Avenue NW, Washington, DC 20036

Energy Topics: conservation

Types of Activities: simple sewing projects, along with other simple projects for the home

Approaches: compilation of basic ideas on how to save energy in the home

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is an interesting collection of ideas

Title: Science Activities in Energy

Author: Oak Ridge Associated Universities **Issue Date:** 1977

Suggested Grade Levels: 4th and up

Suggested Subject Areas: science

Media Types: six folders of activity sheets, some with teacher's guides

Teacher Resource; Student Material

Cost: free

Source: U.S. Dept. of Energy, Technical Information Center, P.O. Box 62, Oak Ridge, TN 37830

Energy Topics: six folders: Solar Energy, Conservation, Chemical Energy, Electrical Energy, Solar Energy II, Wind Energy

Types of Activities: simple experiments

Approaches: open-ended explorations of the above topics

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? elementary level physical science, to explain the "why" of concepts encountered in experiments

Other/General Comments: This is a very good set of activities, well designed and attractively presented; kids will have fun with the experiments. Some experiments should be closely supervised. This series is highly recommended.

ACTIVITIES

Title: The Solar Cookery Book: Everything Under the Sun

Author: Beth and Dan Halacy **Issue Date:** 1978

Suggested Grade Levels: junior high – adult

Suggested Subject Areas: home economics, industrial arts

Media Types. 108 page softcover book

General Information

Cost: $7.95

Source: Peace Press, 3828 Willat Avenue, Culver City, CA 90230

Energy Topics: solar cooking, solar ovens and hot plates, solar energy

Types of Activities: construction projects, solar cooking instructions

Approaches: complete instructions for building solar oven and hot plate; recipes for solar cookery

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? simple construction skills would be helpful but not absolutely necessary; sources of supplies given

Other/General Comments: This is a very complete coverage of solar cookery using a solar oven and solar hot plate.

Title: Solar Energy

Author: Franklyn M. Branley **Issue Date:** 1975

Suggested Grade Levels: jr. – sr. high

Suggested Subject Areas: general information

Media Types: 118 page book

Student Material

Cost: $7.95

Source: Harper & Row, 10 East 53 Avenue, New York, New York 10022

Energy Topics: definitions, sources, solar projects, solar design, future possibilities

Types of Activities: some solar projects and simple experiments

Approaches: gives background on principles of solar energy use, and encourages simple experimenting

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? The book can be used as an introduction, or to encourage projects for those already interested. Not much background is assumed. More diagrams would be helpful.

Other/General Comments: This is a good overview of solar energy.

ACTIVITIES

Title: Solar Energy

Author: John Hoke **Issue Date:** revised 1978

Suggested Grade Levels: 8 and up

Suggested Subject Areas: science

Media Types: 90 page book

Student Material

Cost: $3.45

Source: Franklin Watts Publ., 730 Fifth Ave., NY, NY 10019

Energy Topics: solar principles, solar cells, future of solar energy use

Types of Activities: some projects using solar cells and small motors

Approaches: The book is very optimistic about solar energy. It gives brief histories of different solar applications, and much detail on principles of various uses.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? Projects assume some familiarity with tools and motors. The book covers some of the background material rather briefly.

Other/General Comments: This is a good overview of solar energy, concentrating on details of principles and use of solar cells.

Title: Solar Energy Education Packet

Author: Center for Renewable Resources **Issue Date:** 1979

Suggested Grade Levels: K – 12

Suggested Subject Areas: all subjects

Media Types: 59 page booklet

Teacher Resource

Cost: $3.75 plus postage

Source: Center for Renewable Resources, 1001 Connecticut Ave., N.W., Washington, D.C. 20036

Energy Topics: principles of solar use, solar vocabulary and definitions, background articles

Types of Activities: experiments, discussions, art projects

Approaches: intersperses sections of background material with activities. This is a compilation of activities used all over the country.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? varies with activity. In general, not much assumed.

Other/General Comments: The book is a good resource for teachers.

ACTIVITIES

Title: Solar Energy Experiments for Secondary School Students

Author: Thomas W. Norton, et al **Issue Date:** 1977

Suggested Grade Levels: secondary

Suggested Subject Areas: physical sciences, industrial arts

Media Types: 130 page book

Teacher Resource; Student Material

Cost: $5.95

Source: Rodale Press, 33 E. Minor St., Emmaus, PA 18049

Energy Topics: solar energy experiments, energy use and demand, insulation and conductance

Types of Activities: experiments, problems, some discussions

Approaches: a brief introduction is given to different concepts and is immediately followed by a detailed experiment — many of which involve building things (collectors, boxes, etc.)

Student Outcomes: Clearly Stated? Yes

What Teacher Background is Assumed? teacher should have some physical sciences and math background

Other/General Comments: This has a good list of detailed experiments, showing principles of solar energy use.

Title: Solar Energy Project

Author: New York State Education Department and Atmospheric Science Research Center, State University of N.Y. at Albany **Issue Date:** 1979

Suggested Grade Levels: Grade 7-12

Suggested Subject Areas: General Science, Earth Science, Biology, Chemistry, Physics, Ind. Arts

Media Types: 7 booklets, available separately

Teacher Resource; Student Material

Cost: free

Source: U.S. Department of Energy, Technical Information Office, P.O. Box 62, Oak Ridge, TN 37830

Energy Topics: solar principles, storage, comparison of different collectors

Types of Activities: projects, experiments, demonstrations

Approaches: uses experiments to get students involved in learning principles of solar energy

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? experience in supervising labs

Other/General Comments: This is a very good set of activities.

ACTIVITIES

Title: The Solar Food Dryer Book

Author: Stella Andrassy **Issue Date:** 1978

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: home economics, industrial arts

Media Types: 127 page paperback book

General Information

Cost: $3.95

Source: Morgan and Morgan Inc., 145 Palisade Street, Dobbs Ferry, NY 10522

Energy Topics: conservation, solar energy

Types of Activities: construction plans for a sunhood, directions for drying food, recipes using dried foods

Approaches: proposes drying foods for health, economy, and energy conservation reasons

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? simple construction skills helpful for construction of sunhood; bibliography included

Other/General Comments: This is an interesting approach, even if it is only for experimentation and demonstration

Title: Staples Energy Conservation Program

Author: Staples teachers & consultants, Ray Gildow et al **Issue Date:** 1978

Suggested Grade Levels: K – 12

Suggested Subject Areas: social studies, industrial arts, agriculture, language arts, math, home economics

Media Types: 10 notebooks and folders of activities

Teacher Resource

Cost: $90.00

Source: Staples Independent School District #793, Staples, MN 56479

Energy Topics: definitions, forms, sources, uses, energy storage, networks, costs, priorities, trends

Approaches: strongly promotes conservation; gets students to explore their own actions and values; contains many different types of activities for different subjects

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? none assumed

Other/General Comments: This has lots of ideas, laid out in a way that teachers can use easily.

ACTIVITIES

Title: Tapping the Earth's Heat

Author: Patricia Lauber **Issue Date:** 1978

Suggested Grade Levels: 3 – 6

Suggested Subject Areas: science, general information

Media Types: 64 page book

Student Material

Cost: $4.74

Source: Garrard Publishing Co., 107 Cherry Street, New Canaan, CT. 06840

Energy Topics: principles of geothermal energy

Types of Activities: some simple experiments

Approaches: optimistic view of geothermal energy

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none assumed

Other/General Comments: This is a good introduction to geothermal. Some children will need help reading this.

Title: Teaching About Energy Awareness: 33 Activities

Author: Nancy Dille, Editor **Issue Date:** 1978

Suggested Grade Levels: 5 – 12

Suggested Subject Areas. social studies, home economics, science, govt., economics, language arts

Media Types: 180 page notebook

Teacher Resource

Cost: $7.95

Source: Center for Teaching, International Relations, University of Denver (Colorado Seminary), Denver, Colorado 80208

Energy Topics: energy use, conservation, alternative sources, environment

Types of Activities: discussions, short activities, surveys, class projects

Approaches: The emphasis is on individuals exploring their own energy use and values.

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive; Affective

What Teacher Background is Assumed? background varies with activity. In general, little background is needed. A background section on alternative sources of energy is provided. (It is pessimistic about nuclear).

Other/General Comments. This is a mixed collection of activity ideas. It is worth reviewing.

ACTIVITIES

Title: Teaching About Energy . . . How to Turn Them On

Author: Natural Gas Council **Issue Date:** 1977

Suggested Grade Levels: 4 – 12 depending on activity

Suggested Subject Areas: science

Media Types: packet of activities

Teacher Resource

Cost: free

Source: Natural Gas Council, 529 West Butler Square, Minneapolis, Minnesota 55403

Energy Topics: use, waste, conservation, transfer, solar

Types of Activities: games, experiments

Approaches: unsequenced activities presented with very little background information

Student Outcomes: Clearly Stated? Yes **Areas:** Cognitive

What Teacher Background is Assumed? varies widely with activity, bibliography included

Other/General Comments. Some of these activities might work with an energy unit the teacher has already set up; it's difficult to identify appropriate levels for some of the activities.

Title: Tilly's Catch A Sunbeam Coloring Book

Author: Tilly Spetgang **Issue Date:** 1975

Suggested Grade Levels: 1 – 6

Suggested Subject Areas. science, interdisciplinary

Media Types: coloring book

Teacher Resource; Student Material

Cost: $1.50/quantity price reductions

Source: Solar Service Corporation, 306 Cranford Road, Cherry Hill, New Jersey 08003

Energy Topics: elementary solar heating

Types of Activities: coloring book

Approaches: relating concepts to child's home environment

Student Outcomes: Clearly Stated: No **Areas:** Cognitive

What Teacher Background is Assumed? none needed

Other/General Comments: This is a very good, simple, brief look at solar energy. It has large print and good pictures to color.

ACTIVITIES

Title: Understanding Solar Energy Systems

Author: Laurie Keaton, Everett Edington, Mark Stephey **Issue Date:** 1978

Suggested Grade Levels: high school & up

Suggested Subject Areas. industrial/vocational, physical sciences

Media Types: 128 pg. booklet

Teacher Resource

Cost: $7.00

Source: Wisconsin Vocational Studies Center, Univ. of Wisconsin-Madison, 1025 W. Johnson St., Madison, Wisconsin

Energy Topics: principles of solar energy, different types of systems, heat storage & distribution

Types of Activities: combines background information with hands-on activities

Student Outcomes: **Clearly Stated?** Yes **Areas:** Cognitive

What Teacher Background is Assumed? familiarity with principles of solar heating

Other/General Comments: This is a good, practical introduction to solar energy.

Background

BACKGROUND MATERIALS GRADE LEVEL INDEX

Entries are made *only* at the lowest appropriate level in this index, although many can be used on more than one level. Elementary is defined as K-6, junior high is 7-9, and senior high is 10-12.

Elementary and Above

The Best Present of All (Houck) (3-6)
Black Sunshine: The Story of Coal (Burt) (6-9)
Energy (Adler) (6-12)
Energy from the Sun (Berger) (3-5)
Energy: Its Past, Its Present, Its Future (Gutnik) (4-7)
Energy: Past, Present, and Future (Educational Insights) (4-9)
How Did We Find Out About Nuclear Power (Asimov) (5-9)
Nuclear Energy (Halacy) (5-9)
Nuclear Power Plants (Mass. Public Interest Research Group) (5-12)
Oil (Lowery) (2-4)
Only Silly People Waste (Smaridge) (K-4)
Recycling Responds and Recycling Resources (National Association of Recycling Industries) (6-12)
Saving Electricity (Epstein) (4-6)
The Story of Natural Gas Energy (American Gas Association) (6-12)
The Story of Offshore Oil (Neal) (4-8)
Tips for Energy Savers (DOE) (5-12)
Too Much Garbage (Lauber) (2-5)

Junior High and Above

Acid Rain: Research Summary (US EPA) (7-12)
At Home in the Sun (Davis and Lindsey) (8-12)
Careers in the Energy Industry (Kraft) (7-9)
Chains, Webs, and Pyramids (Pringle and Adkins) (7-12)
Conservation of Energy (Watson) (7-9)
Eco-tips (Concern, Inc.) (7-12)
Energy: A Growing National Problem (National Wildlife Fed.) (7-12)
Energy and Our Future (Oxenhorn) (7-12)
Energy: Power for People (Pringle) (7-12)
Energy Resources: Past, Present and Future (Newton) (7-12)
Facts About Oil (American Petroleum Institute) (9-12)
Going, Going, Gone? The Waste of Our Energy Resources (Marshall) (7-12)
Harnessing the Sun: The Story of Solar Energy (Knight) (8-12)
1980 Gas Mileage Guide (US EPA) (7-12)
Nuclear Power: From Physics to Politics (Pringle) (7-12)
Oil and Natural Gas (Kraft) (7-9)
Professional Energy Careers (US DOE) (7-12)
The Quest for Oil (Roberts) (7-12)
Sun Power: Facts About Solar Energy (Gadler, et al) (7-12)
200 Ways to Save on Energy in the Home and Still be Comfortable (Roscoe) (7-12)
Underground Furnaces: The Story of Geothermal Energy (Kiefer) (7-12)
Wind, An Energy Alternative (US DOE) (7-12)

Senior High

Accidents Will Happen: The Cast Against Nuclear Power (Environmental Action Fdn.) (10-12)
Alternative Sources of Energy (Eccli) (10-12)
Architecture and Energy (Stein) (11-12)
Catch the Wind: A Book of Windmills and Wind Power (Dennis) (10-12)
The Coming Age of Solar Energy (Halacy) (10-12)
The Energy Balloon (Udall) (10-12)
The Energy Crisis (Szulc) (10-12)
Energy Dilemmas (League of Women Voters) (10-12)
Energy, Ecology, Economy (Garvey) (12)
Energy-Environment Source Book (Fowler) (10-12)
Energy: From Source to Use (Stoker et al) (10-12)
Energy in the World of the Future (Hellman) (10-12)
Energy Kit (League of Women Voters) (10-12)
Energy Options (League of Women Voters) (10-12)
Energy or Extinction? The Case for Nuclear Power (Hoyle) (10-12)
Energy/Pollution (Chicago Tribune) (10-12)
Energy Primer (Merrill and Gage) (10-12)
Energy: The Solar Prospect (Worldwatch Institute) (10-12)
Fact Sheets on Energy Technologies (Fowler) (10-12)
Farm to Table: The Food-Energy Link (Americans for Energy Independence) (10-12)
Heating the Home with Wood (Agriculture Extension Service) (10-12)
In Search of an Energy Policy (Willard) (10-12)
An Introduction to Energy Sources (League of Women Voters) (10-12)
Kilowatt Counter (Friend and Morris) (10-12)
Repairs, Reuse, Recycling-First Steps Toward a Sustainable Society (Worldwatch Institute) (10-12)
Running on Empty: The Future of the Automobile in an Oil Short World (Brown et al) (10-12)
The Solar Greenhouse Book (McCullagh) (10-12)
The Solar Home Book: Heating, Cooling and Designing with the Sun (Anderson) (10-12)
Stepping Stones: Appropriate Technology and Beyond (Rain) (10-12)
Sun! A Handbook for the Solar Decade (Friends of the Earth) (10-12)
Tips for the Motorist: Don't Be Fuelish (FEA) (10-12)
The Woodburner's Encylcopedia (Shelton and Shapiro) (10-12)

BACKGROUND

Title: Accidents Will Happen: The Case Against Nuclear Power

Author: Environmental Action Foundation **Issue Date:** 1979

Suggested Grade Levels: senior high

Suggested Subject Areas. social studies, science

Media Types: 340 page paperback

General Information

Cost: $2.50

Source: Harper and Row, 10 E. 53rd Street, New York, NY 10022

Energy Topics: nuclear power, solar power, conservation, Three Mile Island

Types of Activities: none

Approaches: anti-nuclear essays approach the nuclear issue from different viewpoints

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none, extensive bibliography included

Other/General Comments. This is a collection of essays by various authors; it provides current information.

Title: Acid Rain! Research Summary

Author: U.S. Environmental Protection Agency **Issue Date:** 1979

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: science

Media Types: 23 page booklet

General Information

Cost: free

Source: Research Publications, Office of Research and Development, RD-674, US EPA, Washington, DC 20460

Energy Topics: acid rain-one effect of our increased burning of fossil fuels

Types of Activities. none

Approaches: brief overview of the ecological impacts of acid rain on the environment, also cites current research projects

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? would be helpful to have additional information on the topic available, brief bibliography included

Other/General Comments: Acid rain is a timely issue that Minnesota faces, especially with the proposed increased use of coal and the highly sensitive area of northeastern Minnesota. A flier titled *Acid Precipitation Problem* is also available from the US EPA.

BACKGROUND

Title: Alternative Sources of Energy

Author: Sandy Eccli (ed.) **Issue Date:** 1975

Suggested Grade Levels: teacher or high school resource book

Suggested Subject Areas: sciences, social studies, language, values

Media Type: 280 page catalogue-type book

General Information

Cost: $8.95

Source: Seabury Press, 815 Second Avenue, New York, NY 10017

Energy Topics: alternative energy sources, politics of energy, poetry, conservation

Types of Activities: none suggested as such – contains information on building or refining some backyard type energy systems

Approaches: mixed bag of information, opinion, poetry, counter-culture articles and references

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? varies with different articles; extensive bibliography on energy and power, solar energy, wind, water, agriculture and organic fuels, energy storage, energy conversion devices, direct energy conversion, architecture and the arts

Other/General Comments: This is a source book in the style and basic format of the *Whole Earth Catalogue.*

Title: Architecture and Energy

Author: Richard G. Stein **Issue Date:** 1978

Suggested Grade Levels. grades 11 – 12, adult

Suggested Subject Areas: art, architectural drawing, general interest

Media Types. 322 page softcover book

General Information

Cost: $6.95

Source: Doubleday & Co., 245 Park Avenue, New York, NY 10017

Energy Topics: conservation through efficient building design

Types of Activities: none

Approaches: practical examples and suggestions for designing buildings that conserve energy, in contrast to the majority of our present day structures that were built without regard for energy consumption rates

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is interesting and thought provoking; it stresses using conventional energy sources rather than alternative sources.

BACKGROUND

Title: At Home in the Sun

Author: Norah Deakin Davis & Linda Lindsey **Issue Date:** 1979

Suggested Grade Levels: grades 8 – 12

Suggested Subject Areas: industrial arts, general information

Media Types: 236 page paperback book

General Information

Cost: $9.95

Source: Garden Way Publishing, Charlotte, VT 05445

Energy Topics: solar homes, solar heat

Types of Activities: none

Approaches: specific descriptive information and technical data given for a wide variety of solar homes, background information on solar-heating systems

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: The book is well illustrated, both with photographs and diagrams. Failures, as well as successes, are pointed out.

Title: The Best Present of All

Author: Oliver A. Houck **Issue Date:** 1974

Suggested Grade Levels: grades 3 – 6 (see other)

Suggested Subject Areas: language arts, general information

Media Types: 24 page reprint from *Ranger Rick's Magazine*

General Information

Cost: 1 copy free, 30¢ in quantity

Source: National Wildlife Federation, 1412 16th Street NW, Washington, D.C. 20036

Energy Topics: sources of energy

Types of Activities: none

Approaches: Fictional short story that points out the negative environmental impact of using fossil fuels and hydroelectric power and emphasizes the positive aspects of solar and geothermal energy

Student Outcomes. Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: The story could be read aloud to younger students.

BACKGROUND

Title: Black Sunshine: The Story of Coal

Author. Olive W. Burt **Issue Date:** 1977

Suggested Grade Levels: grades 6 – 9

Suggested Subject Areas: general information, careers

Media Types: 64 page hardcover book

General Information

Cost: $6.97

Source: Simon & Schuster, 1230 Avenue of the Americas, New York NY 10020

Energy Topics: coal

Types of Activities: none

Approaches: overview of the formation, mining, and uses of coal

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; glossary of words that are italicized throughout text; see note below.

Other/General Comments: The teacher should point out that the negative impact of coal burning on air quality is overlooked and should also correct the outdated information that solar and nuclear energy are not yet realities.

Title: Careers in the Energy Industry

Author: Betsy Harvey Kraft **Issue Date:** 1977

Suggested Grade Levels. Jr. High

Suggested Subject Areas: Careers

Media Types: 68 pg. hardback book

Student Material

Cost: $4.47

Source: Franklin Watts, 730 Fifth Avenue, New York, N.Y. 10019

Energy Topics: different jobs available in different energy fields – fossil fuels, nuclear power, electricity, government.

Types of Activities: None

Approaches: Careers in each industry are described very briefly, with some specific suggestions for high school and college preparation.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none needed

Other/General Comments: This is a brief overview that mentions many possible careers in energy. Because it is little more than a list, it would probably need much material that gives more detail if a unit were planned.

BACKGROUND

Title: Catch the Wind: A Book of Windmills and Wind Power

Author: Landt Dennis **Issue Date:** 1976

Suggested Grade Levels: high school, adult (possibly jr. high)

Suggested Subject Areas: general information

Media Types: 114 page hardback book

General Information

Cost: $8.95

Source: Four Winds Press, 50 West 44th, New York, NY 10036

Energy Topics: wind power, history, current innovations, future role in meeting energy needs

Types of Activities: none

Approaches: very optimistic about future potential for wind power in supplying part of our energy

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is a very interesting, attractive book (lots of pictures) and gives a good historical introduction to windpower.

Title: Chains, Webs, and Pyramids

Author: Lawrence Pringle and Jan Adkins **Issue Date:** 1975

Suggested Grade Levels: junior high and up

Suggested Subject Areas: 34 page book

Student Material

Cost: $7.89

Source: Thomas Y. Crowell Publishers, 666 Fifth Avenue, New York, NY 10019

Energy Topics: energy transfer in different food chains

Types of Activities: none

Approaches: basic background information

Student Outcomes: Clearly Stated? no

What Teacher Background is Assumed? none

Other/General Comments: This is an excellent background book for life sciences.

BACKGROUND

Title: The Coming Age of Solar Energy

Author: D. S. Halacy **Issue Date:** 1973

Suggested Grade Levels: senior high and above

Suggested Subject Areas: science, general interest

Media Types: 230 page hardcover book

General Information

Cost: $11.95

Source: Harper & Row, 10 East 53 Avenue, New York, NY 10022

Energy Topics: solar power, its history and its future

Types of Activities: none

Approaches: the book traces a long history of different solar projects, goes to current experiments and speculations — large and small; it proclaims solar as the energy of the future, and carries through this point of view

Student Outcomes: Clearly Stated? no

What Teacher Background is Assumed? none

Other/General Comments: This is a fascinating compendium of solar lore.

Title: Conservation of Energy

Author: Jane Werner Watson **Issue Date:** 1978

Suggested Grade Levels: junior high

Suggested Subject Areas. science, general information

Media Types: 64 page hardcover book

General Information

Cost: $4.90

Source: Franklin Watts, 730 Fifth Avenue, New York, NY 10019

Energy Topics: energy conservation, fossil fuels

Types of Activities: none

Approaches: overview of sources of energy and energy saving measures

Student Outcomes: Clearly Stated? no

What Teacher Background is Assumed? none; glossary included; teacher could expand on student energy saving measures

Other/General Comments: Nuclear waste disposal has become recognized as a serious problem since the book was written.

BACKGROUND

Title: Eco-tips

Author: Concern, Inc. **Issue Date:** 1975-1980

Suggested Grade Levels: jr. high school, adult

Suggested Subject Areas: general information

Media Types: short pamphlets

General Information

Cost: $1.00 each

Source: Concern, Inc. 2233 Wisconsin Ave. NW, Washington, D.C. 20007

Energy Topics: conservation tips, energy alternatives, energy technology, energy resources on public lands

Types of Activities: none

Approaches: strong promotion of conservation; supports solar, opposes nuclear

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: These give a well done summary of environmentalist positions. They have facts well organized, briefly stated and backed with figures. Check with company for exact titles available.

Title: Energy

Author: Irving Adler **Issue Date:** 1970

Suggested Grade Levels: 6 and up

Suggested Subject Areas: science

Media Types: 48 page book

Student Material

Cost: $7.89

Source: The John Day Company, 666 Fifth Avenue, New York, NY 10019

Energy Topics: definitions (physical science), types, uses, food

Types of Activities: none

Approaches: provides background information in an overview of basic physical science topics

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none needed but more details from teachers about some subjects might help the students

Other/General Comments: This is a fairly straightforward physical science book. Conservation is not mentioned.

BACKGROUND

Title: Energy and Our Future

Author: Joseph M. Oxenhorn **Issue Date:** 1979

Suggested Grade Levels: Jr. High and Sr. High

Suggested Subject Areas: Science

Media Types: 214 pg. book

Student Material

Source: Globe Book Company, Inc., 50 West 23rd Street, New York, N.Y. 10010

Energy Topics: nature of energy, sources, use, historical energy development, future use and alternatives, problems of different sources

Types of Activities: discussion questions at the end of each chapter

Approaches: attempts to present a balanced overview of energy problems

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? no special background needed, although some of the scientific principles of energy relationships are treated quite briefly

Other/General Comments: Good, but nuclear section is somewhat dated by such events as Three Mile Island, and the reassessment of the Rasmussen report. It says no one has been killed in a reactor accident, whereas there *have* been some deaths in a military reactor.

Title: The Energy Balloon

Author: Stewart Udall, et al **Issue Date:** 1976

Suggested Grade Levels: high school and up

Suggested Subject Areas: general background

Media Types: 288 page book

General Information

Cost: $7.95

Source: McGraw Hill, 1221 Avenue of Americas, New York, NY 10020

Energy Topics: use, over use, resultant problems, lifestyle solutions, sources

Types of Activities. none

Approaches: strong environmentalist point of view; analyzes history of energy use/overuse in U.S.; proposes alternatives, lifestyle changes

Student Outcomes. Clearly Stated? No

What Teacher Background is Assumed? none, brief bibliography, no index provided

Other/General Comments: Though several good creative solutions to different problems are offered, the mechanics (political, economic) of implementing them are not; the book is a highly readable account of an environmentalist's view of future lifestyles.

BACKGROUND

Title: The Energy Crisis

Author: Tad Szulc **Issue Date:** 1974

Suggested Grade Levels: high school and up

Suggested Subject Areas: economics, world history and government, social studies

Media Types: book, 135 pages

General Information

Cost: $7.45

Source: Franklin Watts Publishing, 730 Fifth Avenue, New York, NY 10019

Energy Topics: history of the oil embargo of 1973, starting in the 1930's

Types of Activities: none

Approaches: shows the politics and alliances of the major oil companies leading up to the embargo, and oil companies' (and OPEC's) roles in international governme t dealings

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; very short bibliography

Other/General Comments. The book is well written and fast moving. It gives historical background from a consumer advocate point of view.

Title: Energy Dilemmas

Author: League of Women Voters Education Fund **Issue Date:** 1977

Suggested Grade Levels: high school, adult

Suggested Subject Areas: social studies, general information

Media Types: 39 page pamphlet

General Information

Cost: $1.00/(cheaper in quantity)

Source: League of Women Voters, 1730 M. St. NW, Washington, D.C. 20036

Energy Topics: use, sources, economy, supplies, demand, economic relationships, future policy

Types of Activities: none

Approaches: broad, objective overview of the energy problem

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none assumed

Other/General Comments: This is an excellent, non-technical overview of the energy problem. See also the pamphlet *Energy Options* by the League of Women Voters.

BACKGROUND

Title. Energy, Ecology, Economy

Author: Gerald Garvey **Issue Date:** 1972

Suggested Grade Levels: grades 12 – adult

Suggested Subject Areas: science, social studies

Media Types. 235 page softcover book

General Information

Cost: $3.75

Source: W.W. Norton & Co., 500 Fifth Avenue, New York, NY 10036

Energy Topics: environmental effects of the production, transportation, and conversion of fuels

Types of Activities: none

Approaches: definitely pro-environment, suggests solutions to problems be reached based upon facts rather than by free enterprise doctrine or "eco-theology"

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; glossary included

Other/General Comments: This is an excellent treatment of the topic. It remains very relevant today. It could be supplemented by current references on our environmental and energy policies. It demands good reading skills.

Title: Energy-Environment Source Book

Author. John M. Fowler **Issue Date:** 1979 revision

Suggested Grade Levels: high school, adult

Suggested Subject Areas. science, general background, social studies

Media Types. 304 page book

General Information

Cost: $5.00

Source: National Science Teachers Association, 1742 Connecticut Avenue N.W., Washington, D.C. 20009

Energy Topics: supply, production, economics, conservation, policy, flow

Types of Activities. none

Approaches: background book – one in a series of NSTA energy publications; this one is divided into "Energy, Society, and the Environment," and "Energy, Its Extraction, Conversion and Use"

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none needed; provides many diagrams, glossary, math, primer and review

Other/General Comments: This is a good, general background source. Current data are included in this reprint.

BACKGROUND

Title: Energy. From Source to Use

Author: H. S. Stoker, S. L. Seager, R. L. Capener **Issue Date:** 1975

Suggested Grade Levels: high school, adult

Suggested Subject Areas: general information, science

Media Types: 337 page book

General Information

Cost: $6.36

Source: Scott, Foreman & Co., 1900 E. Lake Ave., Glenview, IL 60025

Energy Topics. use, crisis, environment, definition, sources, problems, future alternatives, conservation

Types of Activities: none

Approaches: objective overview of many facets of energy problems

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? not much assumed

Other/General Comments: This book gives a good overview.

Title: Energy from the Sun

Author: Melvin Berger **Issue Date:** 1976

Suggested Grade Levels: 3 - 5

Suggested Subject Areas: science

Media Types: 33 page book

Student Material

Cost: $7.89

Source: Thomas Y. Crowell Publishers, 666 Fifth Avenue, New York, NY 10019

Energy Topics: sources, food types

Types of Activities: one simple experiment

Approaches: background information

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none needed

Other/General Comments: This is a very brief overview of some simple concepts about the sun's energy.

BACKGROUND

Title: Energy: A Growing National Problem

Author: National Wildlife Federation **Issue Date:** 1978

Suggested Grade Levels: jr. high and up

Suggested Subject Areas: supplement for social studies, language arts, science

Media Types: 16 page booklet

General Information

Cost: 1 copy free; 20¢ in quantity

Source: National Wildlife Federation, 1412 16th St. NW, Washington, DC 20036

Energy Topics: use, sources, conservation

Types of Activities: none

Approaches: brief overview, lots of drawings, emphasizes conservation

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none assumed; glossary included

Other/General Comments: This is a good, brief overview of energy.

Title: Energy in the World of the Future

Author: Hal Hellman **Issue Date:** 1973

Suggested Grade Levels: high school and up

Suggested Subject Areas: science, general background

Media Types: book, 240 pages

General Information

Cost: $6.95

Source: M. Evans & Co., Inc., 216 East 49 Street, New York, NY 10017

Energy Topics: sources, conversions, how different methods work, possible future alternatives

Types of Activies: none

Approaches: discusses different energy sources and plants and gives low level technical explanation of how different ones work; pro-nuclear conclusion – but not necessarily fast-breeder reactor

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none necessary; bibliography included; lots of good diagrams

Other/General Comments: This book contains good, simple explanations of how things work.

BACKGROUND

Title: Energy: Its Past, Its Present, Its Future
Author: Martin J. Gutnik **Issue Date:** 1975
Suggested Grade Levels: 4 – 7
Suggested Subject Areas: science
Media Types. hardbound book, 48 pages
Student Material
Cost: $5.95
Source: Childrens Press, Inc., 1224 W. Van Buren, Chicago, IL 60607
Energy Topics: energy sources, definition, uses
Types of Activities: none
Approaches: background information
Student Outcomes: Clearly Stated? No **Areas:** Cognitive
What Teacher Background is Assumed? none; diagrams and glossary included
Other/General Comments: This is a good, simple look at sources of energy.

Title: Energy Kit (#552)
Author: Staff Writers **Issue Date:** 1974-79
Suggested Grade Levels: senior high – adult
Suggested Subject Areas: social studies, general background
Media Types: set of 24 fact sheets
General Information
Cost: $1.50/set
Source: League of Women Voters Education Fund, 1730 M Street NW, Washington, DC 20036
Energy Topics: oil, offshore drilling, coal reserves, coal gasification, solid waste, energy policy, electricity, conservation, home appliances
Types of Activities: none
Approaches: series of briefs on significant aspects of the energy problem
Student Outcomes: Clearly Stated? No
What Teacher Background is Assumed? none; references listed for each brief; two bibliography sheets are included
Other/General Comments: These are arranged in an interesting format; it provides continuous updating of references and issues.

BACKGROUND

Title: Energy Options

Author: League of Women Voters Education Fund **Issue Date:** 1977

Suggested Grade Levels: high school, adult

Suggested Subject Areas: social studies, general information

Media Types: 55 page pamphlet

General Information

Cost: $1.00/cheaper in quantity

Source: League of Women Voters, 1730 M. St. NW, Washington, DC 20036

Energy Topics: alternatives, use, politics, decision making, future

Types of Activities: none

Approaches: broad, objective overview of energy choices

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? none assumed

Other/General Comments: This is an excellent, non-technical overview of the energy problem. See also the pamphlet *Energy Dilemmas* by the League of Women Voters.

Title: Energy or Extinction? The Case for Nuclear Energy

Author: Fred Hoyle **Issue Date:** 1977

Suggested Grade Levels: senior high – adult

Suggested Subject Areas: physics, general information

Media Types: 80 page paperback

General Information

Cost: $3.50

Source: Heinemann Educ. Books, Inc., 4 Front Street, Exeter, NH 03833

Energy Topics: nuclear energy

Types of Activities: none

Approaches: definitely pro nuclear, refutes the claims for non-nuclear energy sources

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? additional background reading in nuclear energy is necessary

Other/General Comments: This could serve as debate material. It would be interesting to compare this book to an anti-nuclear book such as *Accidents Will Happen: The Case Against Nuclear Power.*

BACKGROUND

Title: Energy: Past, Present, and Future

Author: Educational Insights **Issue Date:** 1977

Suggested Grade Levels: grades 4 – 9

Suggested Subject Areas: science

Media Types: 8 full color posters

General Information

Cost: $9.95

Source: Educational Insights, 20435 S. Tillman Avenue, Carson, CA 90746

Energy Topics: oil, gas, coal, hydro, nuclear, solar, wind, geothermal

Types of Activities: simple experiments

Approaches: visual representation of energy sources, along with text on both sides; presents both advantages and disadvantages

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: These are a good introduction to energy sources, and would be useful as supplementary materials.

Title: Energy/Pollution

Author: Stephen A. Huth **Issue Date:** 1976

Suggested Grade Levels: senior high

Suggested Subject Areas: social studies

Media Types: 32 page newspaper unit

Student Material

Cost. $.62

Source: Chicago Tribune, Educ. Services, 260 Tribune Tower, 435 N. Michigan, Chicago, IL 60611

Energy Topics: recycling, nuclear power, fossil fuels, alternative energy sources

Types of Activities: research, creative writing, debate

Approaches: pessimistic about the future of fossil fuels, optimistic about alternative energy sources

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: The environmental effects of energy production are stressed. Materials should be followed up with current information on the same topics. This is a series of relevant topics and illustrations.

BACKGROUND

Title: Energy: Power for People

Author: Lawrence Pringle **Issue Date:** 1975

Suggested Grade Levels: junior high (depending on reading skills) and up

Suggested Subject Areas: general background reading on energy

Media Types: 148 page book

Student Material

Cost: $8.95

Source: MacMillan Publishing Co., 866 Third Avenue, New York, NY 10022

Energy Topics: sources, supply, shortage, lifestyle

Types of Activities: none

Approaches: explains energy sources, advantages, disadvantages; discusses lifestyle and conservation

Student Outcomes. Clearly Stated? No **Areas:** Cognitive

What Teacher Background is Assumed? none; has bibliography and glossary

Other/General Comments: This is a good reference and background book.

Title: Energy Primer

Author: Richard Merrill & Thomas Gage (eds.) **Issue Date:** 1978

Suggested Grade Levels: sr. high, adult

Suggest Subject Areas: general information, industrial arts, science

Media Types: 256 page book

General Information

Cost: $7.95

Source: Dell Publishing Co., 1 Dag Hammerskjold Plaza, 245 E. 47th Street, New York, N.Y. 10017

Energy Topics. definitions, alternative sources of energy (solar, wind, water biomass, wood) solar architecture

Types of Activities: plans for various energy systems

Approaches: catalog of "soft energy path" ideas

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? varies with different sections

Other/General Comments: This is a very good resource. It combines short articles with schematic drawings, book reviews, lists of equipment (by brand name), suppliers, and resource lists. It is in the style of *The Whole Earth Catalog.*

BACKGROUND

Title: Energy Resources: Past, Present and Future

Author: David E. Newton **Issue Date:** 1973

Suggested Grade Levels: junior high – senior high

Suggested Subject Areas: science

Media Types: 45 visual masters

General Information

Cost: $9.00

Source: J. Weston Walch, P.O. Box 658, Portland, Maine 04104

Energy Topics: energy consumption, historical power sources, power conversion processes, available energy resources, electricity, nuclear power, geothermal power

Types of Activities: discussion

Approaches: provides graphic representations of energy related facts and data

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; background information is provided for each visual; best used to supplement an energy unit

Other/General Comments: Some information such as energy consumption rates and known resource figures would need to be updated from 1970 data.

Title: Energy: The Solar Prospect (Worldwatch Paper II)

Author: Dennis Hayes **Issue Date:** 1977

Suggested Grade Levels: high school and up

Suggested Subject Areas: science, Am. futures, general information

Media Types. 80 page booklet

General Information

Cost: $2.00

Source: Worldwatch Institute, 1776 Massachusetts Avenue N.W., Washington, D.C. 20036

Energy Topics: use, projected shortages, future options

Types of Activities: none

Approaches: this presents a coherent case for solar alternative energy development, including wind, photovoltaic cells, hydro, and biomass

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; the footnotes provide an interesting bibliography

Other/General Comments: This is a cogent argument for the immediate development of the solar alternative. It is well-written, fascinating reading.

BACKGROUND

Title: Fact Sheets on Energy Technologies

Author: John M. Fowler **Issue Date:** 1980

Suggested Grade Levels: senior high

Suggested Subject Areas: science, energy

Media Types: series of short pamphlets

General Information

Cost: free

Source: U.S. Department of Energy, Technical Information Office, P.O. Box 62, Oak Ridge, Tennessee 37830

Energy Topics: sources, alternatives, transportation, impact, reactor types, conservation

Types of Activities: none

Approaches: brief introduction to each topic, accompanied by statistics and bibliography; 19 different factsheets are available

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? varies; in general, little background is needed; these don't go into great depth, but do include bibliography and glossary

Other/General Comments: In general, these give good, brief introductions to different topics. Order a complete set, for they refer to information on the different pamphlets in the series. They could be good supplements to an energy unit.

Title: Facts About Oil

Author: American Petroleum Institute **Issue Date:** 1977

Suggested Grade Levels: 9 and up

Suggested Subject Areas: science, general background

Media Types: 44 page pamphlet

General Information

Cost: 1 copy free; 35¢ for each additional copy

Source: American Petroleum Institute, 2101 L Street N.W., Washington, D.C. 20037

Energy Topics. oil exploration, use, refining, statistics

Types of Activities: none

Approaches: oil company point of view

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none needed

Other/General Comments: This presents a lot of information about oil from the company point of view.

BACKGROUND

Title: Farm to Table: The Food-Energy Link

Author: Americans for Energy Independence **Issue Date:** 1978

Suggested Grade Levels: senior high

Suggested Subject Areas: agriculture, home economics, general information

Media Types: 22 page booklet

General Information

Cost: 25¢

Source: Americans for Energy Independence, 1629 K Street NW, 12th floor, Washington, DC 20006

Energy Topics: use, conservation

Types of Activities: none

Approaches: focuses upon the energy used on the nation's food system and how vital energy is to the system

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This covers information not commonly found in other energy materials.

Title: Going, Going, Gone? The Waste of Our Energy Resources

Author: James Marshall **Issue Date:** 1976

Suggested Grade Levels: jr. high, sr. high

Suggested Subject Areas: social studies, science, general information

Media Types. 94 page book

Student Material

Cost: $5.99

Source: Coward, McCann & Geoghegan, 200 Madison Ave., New York, NY 10016

Energy Topics: use, definitions, crisis, sources, environmental costs, conservation, nuclear, alternatives

Types of Activities: none

Approaches: brief overview about causes of energy crisis, future possible solutions; discusses problems of nuclear; strongly promotes conservation

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? no special background needed

Other/General Comments: The book is a good overview.

BACKGROUND

Title: Harnessing the Sun: The Story of Solar Energy

Author: David C. Knight **Issue Date:** 1976

Suggested Grade Levels: 8 and up

Suggested Subject Areas: science

Media Types: 128 page book

Student Material

Cost: $6.48

Source: Morrow Jr. Books, 105 Madison Avenue, New York, NY 10016

Energy Topics: solar energy systems, how they work, efficiency, future

Types of Activities: none

Approaches: reviews development of solar energy in past and principles of solar systems; makes future projections

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? introductory level book; glossary included; many diagrams

Other/General Comments: The book gives a very good, clearly stated introduction to solar principles and possibilities.

Title: Heating the Home with Wood

Author: F. Thomas Milton, Lewis Hendricks, Theodore Brevik, Paul Stegmeir **Issue Date:** 1980

Suggested Grade Levels: senior high

Suggested Subject Areas: general information

Media Types: 31 page booklet

General Information

Cost: free

Source: Agricultural Extension Service, University of Minnesota, St. Paul, MN 55108

Energy Topics: wood energy

Types of Activities: inspection checklist for free-standing woodburning stoves

Approaches: overview of burning wood for home heating needs

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none, short bibliography included

Other/General Comments: The book gives good complete coverage of wood procurement and preparation, economics of burning wood, types of wood burners and chimneys, and safety.

BACKGROUND

Title: How Did We Find Out About Nuclear Power?

Author: Isaac Asimov **Issue Date:** 1976

Suggested Grade Levels: upper elementary, jr. high

Suggested Subject Areas: science

Media Types: 64 page book

Student Material

Cost: $6.85

Source: Walker and Company, 720 Fifth Avenue, New York, NY 10019

Energy Topics: basic atomic theory, nuclear energy, development of A-bomb

Types of Activities: none

Approaches: The book leads up to nuclear power use by giving a thorough background on atomic principles and history of discoveries.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? doesn't assume any background, but the ending on use of nuclear power could be expanded by supplementary materials

Other/General Comments: This is a good explanation, but has very little discussion of power generation.

Title: In Search of an Energy Policy

Author: Charles A. Willard **Issue Date:** 1978

Suggested Grade Levels: high school & up

Suggested Subject Areas: debate, social studies

Media Types: 260 page book

Student Material; General Information

Cost: 1 copy – $6.85, 2-9 copies – $4.88

Source: National Textbook Co., 8259 Niles Center Rd., Skokie, Ill. 60077

Energy Topics: how energy policy is formulated, different issues considered in legislative decisions, views of the world

Types of Activities: none, though this is intended as background for debate students

Approaches: The book is an exploration of the background of energy policy making. It calls the crisis political rather than technical, and does an excellent job of supporting that viewpoint.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? no special backgrounds needed, though the teacher may want to examine some of the primary sources mentioned in the many chapter-end footnotes

Other/General Comments: This is a very well done book, combining consideration of process with enough factual material (and references) on energy to be a very valuable resource. The book demands good reading skills.

BACKGROUND

Title: An Introduction to Energy Sources

Author: writing committee **Issue Date:** 1978

Suggested Grade Levels: senior high – adult

Suggested Subject Areas: general information

Media Types: 42 page soft covered book

General Information

Cost: $1.00

Source: Carol A. Wilson, Cheshire League of Women Voters, 60 Creamery Road, Cheshire, CT 06410

Energy Topics: fossil fuels, nuclear fission, alternative energy sources

Types of Activities: none

Approaches: brief overview of the various sources of energy

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; complete with glossary and selected bibliography

Other/General Comments: This is a good introduction to energy sources.

Title: Kilowatt Counter

Author: Gil Friend and David Morris **Issue Date:** 1974

Suggested Grade Levels: high school, adult

Suggested Subject Areas: energy (see below)

Media Types: 36 page pamphlet

General Information

Cost: $2.00

Source: Alternative Sources of Energy, Route 2, Box 90A, Milaca, MN 56353

Energy Topics: sources, conversion, use, alternatives, how to conserve, lifestyle

Types of Activities: none

Approaches: details problem and impact, from global to personal, of high energy consuming lifestyle

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is a good source of information. It sets out to establish a base for intelligent consumer decision making, and does a good job.

BACKGROUND

Title: 1980 Gas Mileage Guide

Author: U.S. Environmental Protection Agency **Issue Date:** 1979 (revised yearly)

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: driver education, economics

Media Types: 37 page booklet

General Information

Cost: free

Source: Fuel Economy Distribution, Technical Information Center, Department of Energy, P.O. Box 62, Oak Ridge, Tennessee 37830

Energy Topics: duel economy

Types of Activities: none

Approaches: guide to estimated EPA ratings for 1980 cars

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is a useful reference for providing current cata for activities requiring this information.

Title: Nuclear Energy

Author: Dan Halacy **Issue Date:** 1978

Suggested Grade Levels: upper elementary, junior high

Suggested Subject Areas: physical science, general information

Media Types: 64 page hardcover book

General Information

Cost: $4.90

Source: Franklin Watts, 730 Fifth Ave., New York, NY 10019

Energy Topics: nuclear power, atomic theory

Types of Activities: none

Approaches: objective overview of nuclear power, points out both pros and cons

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; glossary and short bibliography included

Other/General Comments: This book gives a good introduction to nuclear power.

BACKGROUND

Title: Nuclear Power: From Physics to Politics

Author: Laurence Pringle **Issue Date:** 1979

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: science, social studies

Media Types: 133 page hardcover book

General Information

Cost: $7.95

Source: Macmillan Publishing Co., 866 Third Avenue, New York, NY 10022

Energy Topics: nuclear power

Types of Activities: none

Approaches: presents both points of view on nuclear energy, although it does not purport to be neutral

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? none

Other/General Comments: This is one of the most accurate and thorough overviews of nuclear power and its surrounding controversies to date.

Title: Nuclear Power Plants

Author: Massachusetts Public Interest Research Group **Issue Date:** 1978

Suggested Grade Levels: grades 5 – 12

Suggested Subject Areas: science, background information

Media Types: set of 2 posters

General Information

Cost: $6.00/set

Source: Soft-Aware Associates, Inc., P.O. Box 80, Marlborough, NH 03455

Energy Topics: solar energy, nuclear energy

Types of Activities: none

Approaches: anti-nuclear, pro-solar; relates both forms of energy to the natural processes of planting and harvesting a garden

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? none

Other/General Comments: Extensive discussion of both issues is found on the back of the posters.

Title: Oil

Author: Barbara Lowery **Issue Date:** 1977

Suggested Grade Levels: grades 2 – 4

Suggested Subject Areas: general information

Media Types: 48 page hardcover book

General Information

Cost: $4.47

Source: Franklin Watts, 730 Fifth Avenue, New York, NY 10019

Energy Topics: oil

Types of Activities: none

Approaches: brief overview of how oil is found, removed from the earth, and processed; and of the different uses for different grades of oil

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; would need to supply additional information on environmental consequences of drilling and transporting oil

Other/General Comments: This is a factual book with a controlled vocabulary. Conservation and future outlook for oil reserves are not covered.

Title: Oil and Natural Gas

Author: Betsy Harvey Kraft **Issue Date:** 1978

Suggested Grade Levels: jr. high

Suggested Subject Areas: general information

Media Types: 64 page book

Student Material

Cost: $4.90

Source: Franklin Watts, 730 Fifth Avenue, New York, N.Y. 10019

Energy Topics: history of oil & gas, formation of oil & gas, refining, drilling, conservation

Types of Activities: none

Approaches: straightforward story f how oil and gas were formed, are collected, and are used.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none necessary

Other/General Comments: This is a good historical overview.

BACKGROUND

Title: Only Silly People Waste

Author: Norah Smaridge **Issue Date:** 1976

Suggested Grade Levels: K – 4

Suggested Subject Areas: general

Media Types: book

Student Material

Cost: $5.50

Source: Abingdon Press, 201 Eighth Avenue, Nashville, TN 37202

Energy Topics: energy waste

Types of Activities: none

Approaches: 14 humorous poems to be read aloud

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: Each poem tries to make its point by carrying waste of that commodity to ridiculous extremes. Some poems are good, some seem more to amuse adults. The book has lots of drawings.

Title: Professional Energy Careers

Author: U.S. Department of Energy **Issue Date:** 1979

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: career education

Media Types: 45 page booklet

General Information

Cost: free

Source: Energy, P.O. Box 62, Oak Ridge, TN 37830

Energy Topics: energy careers

Types of Activities: none

Approaches: brief descriptions of the professional energy related job, along with educational requirements

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; sources of information suggested for further details on each other

Other/General Comments: This could be used as reference material.

BACKGROUND

Title: The Quest for Oil

Author: W. G. Roberts **Issue Date:** 1977

Suggested Grade Levels: jr. – sr. high

Suggested Subject Areas: general information, careers

Media Types: 158 page book

Student Material

Cost: $9.95

Source: S. G. Phillips, New York, 305 W. 86 Street – New York, N.Y. 10024

Energy Topics: traces history of oil, drilling, use, separation, explorations, transport

Types of Activities: none

Approaches: The book gives quite a bit of detail on the whole oil cycle – from exploration to final use. Some of the statements on controversial issues appear to reflect oil company point of view.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? no specific background, but more material on effects of oil spills on natural systems should be provided. The book takes an extremely optimistic view.

Other/General Comments: This is a good, in-depth look at oil production.

Title: Recycling Responds/Recycling Resources

Author: National Association of Recycling Industries **Issue Date:** 1978

Suggested Grade Levels: grades 6 – 12

Suggested Subject Areas: general information

Media Types: 24 and 18 page booklets

General Information

Cost: free

Source: National Association of Recycling Industries, Inc., 330 Madison Avenue, New York, NY 10017

Energy Topics: conservation through recycling

Types of Activities: none

Approaches: positive approach to recycling, stresses its value in regard to recovering raw materials, conserving energy, and controlling solid waste

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: There are excellent graphics in *Recycling Responds.* The pamphlets could serve as an introduction to a recycling project.

BACKGROUND

Title: Repairs, Reuse, Recycling – First Steps Toward a Sustainable Society

Author: Denis Hayes **Issue Date:** 1978

Suggested Grade Levels: senior high

Suggested Subject Areas: social studies

Media Types: 45 page booklet

General Information

Cost: $2.00

Source: Worldwatch Institute, 1776 Massachusetts Avenue NW, Washington, DC 20036

Energy Topics: conservation through reuse

Types of Activities: none

Approaches: proposes that a materials policy that emphasizes repair, reuse, and recycling would reduce the consumption of both raw materials and energy

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: The book requires good reading skills. The topic is thoroughly researched.

Title: Running on Empty! The Future of the Automobile in an Oil Short World

Author: Lester Brown, Christopher Flavin and Colin Norman **Issue Date:** 1979

Suggested Grade Levels: senior high, adults

Suggested Subject Areas: economics, social studies, general information

Media Types. 116 page hardcover book

General Information

Cost: $7.95

Source: W. W. Norton & Co., 500 Fifth Avenue, New York, NY 10036

Energy Topics: gasoline consumption, global impact of oil shortages and prices on the automobile industry

Types of Activities: none

Approaches: overview of the global impact of oil shortages and prices on the automobile industry; emphasizes increasing automobile efficiency and expanded use of more fuel-efficient transportation modes

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; well footnoted for further inquiry into specific topics

Other/General Comments: This is a scholarly presentation of the issue. It demands good reading skills.

BACKGROUND

Title: Saving Electricity

Author: Sam and Beryl Epstein **Issue Date:** 1977

Suggested Grade Levels: 4 – 6

Suggested Subject Areas: science

Media Types: 64 page hardback book

Student Material

Cost: $4.22

Source: Garrard Publishing Co., 107 Cherry Street, New Canaan, Ct. 06840

Energy Topics: electricity generation and use, conservation, recycling

Types of Activities: none

Approaches: tells the story of school children learning about electricity and conservation in a power blackout; promotes conservation with specific suggested actions

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? none

Other/General Comments: This is a well done presentation of a lot of information.

Title: The Solar Greenhouse Book

Author: James C. McCullagh **Issue Date:** 1978

Suggested Grade Levels: senior high – adult

Suggested Subject Areas: agriculture, general information

Media Types: 328 page hardcover book

General Information

Cost: $10.95

Source: Rodale Press, 33 E. Minor Street, Emmaus, PA 18049

Energy Topics: solar greenhouses, solar heat

Types of Activities: constructions, gardening

Approaches: The book covers design, construction, and crop production in a variety of solar greenhouses. Regional differences are identified.

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? construction skills for building greenhouse; bibliography included

Other/General Comments: Users need to carefully adapt ideas to Minnesota's climate. It gives comprehensive coverage of solar greenhouses and is very well illustrated.

BACKGROUND

Title: The Solar Home Book: Heating, Cooling and Designing with the Sun

Author: Bruce Anderson **Issue Date:** 1976

Suggested Grade Levels: senior high – adult

Suggested Subject Areas: architectural drawing, general information

Media Types: 297 page softcover book

General Information

Cost: $8.50

Source: Cheshire Books, Church Hill, Harrisville, NH 03450

Energy Topics: solar energy, flat-plate collectors, solar greenhouses, conservation, solar water heaters

Types of Activities: constructions

Approaches: comprehensive coverage of solar energy as a feasible alternative energy source for homeowners

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? assumes construction skills; glossary and list of solar products distributors included

Other/General Comments: Although it is technical, the book provides general information through photographs and diagrams.

Title: Stepping Stones: Appropriate Technology and Beyond

Author: Lane deMoll and Gigi Coe, ed. **Issue Date:** 1978

Suggested Grade Levels: senior high, adult

Suggested Subject Areas: social studies, general information

Media Types: 204 page softcover book

General Information

Cost: $7.95

Source: Rain Publications, 2270-B N.W. Irving, Portland, Oregon 97210

Energy Topics: conservation

Types of Activities: none

Approaches: collection of articles from known writers in the field; focuses on a more simple lifestyle in order to reduce dependency on fossil fuels and live in harmony with the environment

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none, references and organizations are included

Other/General Comments: This is a companion volume to *Rainbook*.

BACKGROUND

Title: The Story of Natural Gas Energy

Author: Harold W. Springborn **Issue Date:** 1980

Suggested Grade Levels: grades 6 – 12

Suggested Subject Areas: science, social studies

Media Types: 49 page booklet

General Information

Cost: 50¢

Source: American Gas Association, Educ. Services, 1515 Wilson Blvd., Arlington, VA 22209 or local gas company

Energy Topics: natural gas

Types of Activities: none

Approaches: pro-natural gas, optimistic about its future in the U.S.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: The pamphlet provides a good overview of natural gas.

Title: The Story of Offshore Oil

Author: Harry Edward Neal **Issue Date:** 1977

Suggested Grade Levels: grades 4 – 8

Suggested Subject Areas: general information

Media Types: 64 page hardcover book

General Information

Cost: $6.64

Source: Julian Messner Division, Simon & Schuster, 1230 Avenue of the Americas, New York, NY 10020

Energy Topics: oil

Types of Activities: none

Approaches: overview of the formation, location, and extraction of offshore oil

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; glossary included

Other/General Comments: The book has especially fine coverage of environmental concerns regarding offshore drilling. Black and white photographs supplement the text.

BACKGROUND

Title: Sun! A Handbook for the Solar Decade

Author: numerous authors **Issue Date:** 1978

Suggested Grade Levels: senior high

Suggested Subject Areas: social studies, science, economics

Media Types: 364 page paperback

General Information

Cost: $2.95

Source: Friends of the Earth, 2124 Spear Street, San Francisco, CA 94105

Energy Topics: solar energy, nuclear power, wind power, energy policy

Types of Activities: none

Approaches: optimistic toward solar power; anti-nuclear; differences of opinion given on some issues; generally proposes soft technology

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none, extensive annotated bibliography

Other/General Comments: The book is a series of articles dealing with the above topics. It demands good reading skills.

Title: Sun Power: Facts About Solar Energy

Author: Steve J. Gadler & Wendy Wriston Adamson **Issue Date:** 1979

Suggested Grade Levels: junior high – senior high

Suggested Subject Areas: science, social studies, general information

Media Types: 103 page hardcover

General Information

Cost: $6.95

Source: Lerner Publishing Co., 241 First Avenue N, Minneapolis, MN 55401

Energy Topics: solar energy

Types of Activities: none

Approaches: optimistic outlook for solar energy

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is a useful, readable book surveying the history and future of solar energy; diagrams and photographs add to its clarity.

BACKGROUND

Title: Tips for Energy Savers
Author: U.S. Department of Energy **Issue Date:** 1979
Suggested Grade Levels: grades 5 – adult
Suggested Subject Areas: all subjects
Media Types: 30 page booklet
General Information
Cost: free
Source: E.R.D.A. Technical Information Center, Box 62, Oak Ridge, TN 37830
Energy Topics: conservation
Types of Activities: none
Approaches: listing of energy saving tips for various categories of home energy usage
Student Outcomes: **Clearly Stated?** No
What Teacher Background is Assumed? none
Other/General Comments: use tips selectively for the needs of the students

Title: Tips for the Motorist: Don't Be Fuelish
Author: Federal Energy Administration **Issue Date:** 1975
Suggested Grade Levels: grade 10 – adult
Suggested Subject Areas: driver education
Media Types: pamphlet
General Information
Cost: free
Source: E.R.D.A. Technical Information Center, Box 62, Oak Ridge, TN 37830
Energy Topics: fuel economy
Types of Activities: none
Approaches: listing of thirty practical ways to make gas go further
Student Outcomes: **Clearly Stated?** No
What Teacher Background is Assumed? none
Other/General Comments: The pamphlet contains interesting tips that could benefit all drivers.

BACKGROUND

Title: Too Much Garbage

Author: Patricia Lauber **Issue Date:** 1974

Suggested Grade Levels: grades 2 – 5

Suggested Subject Areas: social studies, general information

Media Types: 64 page hardcover book

General Information

Cost: $5.58

Source: Garrard Publishing Co., 107 Cherry Street, New Canaan, CT 06840

Energy Topics: recycling

Types of Activities: none

Approaches: approaches energy and natural resource conservation through lower consumption rates and better recycling of used products

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; would be interesting to know of local waste disposal practices

Other/General Comments: This book has excellent coverage of the topic for elementary students.

Title: 200 Ways to Save on Energy in the Home and Still Be Comfortable

Author: George B. Roscoe **Issue Date:** 1978

Suggested Grade Levels: junior and senior high

Suggested Subject Areas: home economics, industrial arts

Media Types: 102 page softcover book

General Information

Cost: $4.95

Source: Acropolis Books, Ltd., 2400 17th Street NW, Washington, DC 20009

Energy Topics: conservation

Types of Activities: home energy audit

Approaches: develops an awareness of home energy saving measures

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none, glossary included

Other/General Comments: This is an interesting presentation of energy saving measures. Certain chapters lend themselves to different subject areas and age groups.

BACKGROUND

Title: Underground Furnaces: The Story of Geothermal Energy

Author: Irene Kiefer **Issue Date:** 1976

Suggested Grade Levels: junior high and up

Suggested Subject Areas: science

Media Types: 64 page book

Student Material

Cost: $5.52

Source: Morrow Junior Books, 105 Madison Avenue, New York, NY 10016

Energy Topics: definition and explanation of geothermal energy sources, and projections of its future role

Types of Activities: none

Approaches: background information

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none needed; the book contains many diagrams, plus a glossary

Other/General Comments: The book gives a good, brief introduction to geothermal energy.

Title: Wind, An Energy Alternative

Author: U.S. Department of Energy **Issue Date:** 1980

Suggested Grade Levels: junior – senior high

Suggested Subject Areas: general information

Media Types: pamphlet

General Information

Cost: free

Source: E.R.D.A. Technical Information Center, Box 62, Oak Ridge, TN 37830

Energy Topics: wind energy

Types of Activities: none

Approaches: provides brief background information on wind energy

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none; teacher should have additional references on wind energy available

Other/General Comments: A 16mm film of the same title is available from: SERI, 1617 Cole Blvd., Golden, Colorado 80401.

BACKGROUND

Title: The Woodburner's Encyclopedia

Author: Fay Shelton & Andrew Shapiro **Issue Date:** 1976

Suggested Grade Levels: high school, adult

Suggested Subject Areas: industrial arts, general information

Media Types: 155 page book

General Information

Cost: $8.95

Source: Vermont Crossroads Press, P.O. Box 333, Waitesfield, VT 05673

Energy Topics: principles of safe and efficient woodburning, stove types, different woods, manufacturer's specifications of different stoves, economics of woodburning

Types of Activities: none

Approaches: straightforward, enthusiastic review of woodburning

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? not much assumed

Other/General Comments: The book is an excellent resource.

Reference

TEACHER REFERENCE INDEX

These references are included in order to keep teachers current in energy education and provide them with additional sources of information relevant to their particular needs.

Bibliography

Energy Education Bibliography (EME)
Energy Education Materials (Nat'l Solar Heating and Cooling Info. Center)
Energy Education Materials Inventory: Vol. 2 (DOE)
MN Energy Agency Publications List (MEA)

Glossary

Energy: A Glossary (AAAS)
Energy Glossary (EME)

Newsletter

The Energist (EME)
Energy and Education (NSTA)
The Energy Collector (MEA)
Energy Insider (DOE)
Energy Review (MEA)

Workshop Handbook

Energy Education Workshop Handbook (NSTA)

REFERENCE

Title: The Energist (Newsletter)

Author: Sharon Scherner, editor **Issue Date:** quarterly

Suggested Grade Levels: K – 12 teachers

Suggested Subject Areas: interdisciplinary

Media Types: newsletter

Teacher Resource

Cost: $2.00/yr.

Source: The Energist, Energy and Man's Environment, 7874 SW Nimbus Ave., Beaverton, OR 97005

Energy Topics: varies from one newsletter to another

Types of Activities: brief activities suggested in some issues

Approaches: provides background information on various energy topics, along with references to energy education materials and workshop opportunities

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is an interesting newwletter; it advertises EME's materials.

Title: Energy and Education (Newsletter)

Author: Julia A. Fellows, editor **Issue Date:** Bi-monthly during academic year

Suggested Grade Levels: K – 12 teachers

Suggested Subject Areas: science, interdisciplinary

Media Types: newsletter

Teacher Resource

Cost: free

Source: *Energy and Education,* National Science Teachers Association, 1742 Connecticut Ave., NW, Washington, DC 20009

Energy Topics: varies from one newsletter to another

Types of Activities: brief activities suggested in some issues

Approaches: provides overview of energy education: materials, projects, general information, and calendar of events

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is an excellent newsletter for the teacher who wants to remain current in energy education.

REFERENCE

Title: The Energy Collector (Newsletter)

Author: Joan Hummel, editor **Issue Date:** quarterly

Suggested Grade Levels: K - 12 teachers

Suggested Subject Areas: interdisciplinary

Media Types: newsletter

Teacher Resource

Cost: free

Source: Energy Collector Newsletter, Information and Education, Minnesota Energy Agency, 980 American Center Building, 150 E. Kellogg Blvd., St. Paul, Mn. 55101

Energy Topics: varies from one newsletter to another

Types of Activities: none

Approaches: provides current information on energy workshops, energy education materials and projects, and brief informative articles on various energy topics

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is a good source for Minnesota teachers interested in energy education

Title: Energy Education Bibliography (Bibliography)

Author: John Jones, et al **Issue Date:** 1979

Suggested Grade Levels: teacher use – all grades

Suggested Subject Areas: interdisciplinary

Media Types: 48 page booklet

Teacher Resource

Cost: $4.00

Source: Energy and Man's Environment, 7874 S.W. Nimbus Avenue, Beaverton, Oregon 97005

Energy Topics: reference materials available on different energy topics

Types of Activities: none, but activity collections are also available from the above address

Approaches: the lists are annotated, listing also grade levels and topics

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? None

Other/General Comments: There are several publications put out by EME.

REFERENCE

Title: Energy Education Materials (Bibliography)

Author: Center's Staff **Issue Date:** periodic updates

Suggested Grade Levels: K – 12 teachers

Suggested Subject Areas: interdisciplinary

Media Types: flier

Teacher Resource

Cost: free

Source: National Solar Heating and Cooling Information Center, P.O. Box 1607, Rockville, MD 20850

Energy Topics: energy education publications

Types of Activities: none

Approaches: simple listing of energy education materials

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This list is worth receiving; many of the materials listed are free.

Title: Energy Education Materials Inventory Volume 2 (Bibliography)

Author: U.S. Department of Energy **Issue Date:** 1979

Suggested Grade Levels: K – 12

Suggested Subject Areas: interdisciplinary

Media Types: 443 page annotated bibliography

Teacher Resource

Cost: $14.50

Source: National Technical Information Service, U.S. Dept. of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161

Energy Topics: alternative energy sources; energy conservation, consumption and utilization; energy policy and legislation; environmental/social aspects of energy technology; fossil fuels

Types of Activities: None

Approaches: annotated listing of currently available energy education materials for K-12

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: Excellent organization and indexing make this a useful bibliography.

REFERENCE

Title: Energy Education Workshop Handbook (Workshop Handbook)

Author: National Science Teachers Association **Issue Date:** 1979

Suggested Grade Levels: K – 12 teachers

Suggested Subject Areas: interdisciplinary

Media Types: 81 page guide

Teacher Resource

Cost: free

Source: U.S. Department of Energy, Technical Information Center, P.O. Box 62, Oak Ridge, TN 37830

Energy Topics: energy education workshops

Types of Activities: workshop sessions

Approaches: seven workshop models are presented in detail, along with background data and planning aids

Student Outcomes: **Clearly Stated?** Yes **Areas:** Cognitive

What Teacher Background is Assumed? familiarization with Project for an Energy-Enriched Curriculum (PEEC) would be helpful

Other/General Comments: This gives excellent plans for implementing PEEC units, or general ideas for planning and conducting an energy education workshop for teachers.

Title: Energy: A Glossary (Glossary)

Author: Thomas H Maugh II **Issue Date:** 1973

Suggested Grade Levels: senior high and up

Suggested Subject Areas: general

Media Types: spiral bound booklet, ten pages

General Information

Cost: $1.00

Source: American Association for the Advancement of Science, 1515 Massachusetts Avenue N.W., Washington, D.C. 20036

Energy Topics: definitions of scientific terms dealing with energy

Types of Activities: none

Approaches: See Topics

Student Outcomes: **Clearly Stated?** No

What Teacher Background is Assumed? none; is background information

Other/General Comments: This is a brief but handy listing.

REFERENCE

Title: Energy Glossary (Glossary)

Author: John Jones, et al **Issue Date:** 1978

Suggested Grade Levels: teacher use – all grades

Suggested Subject Areas: interdisciplinary

Media Types: booklet

Teacher Resource; General Information

Cost: $4.00

Source: Energy and Man's Environment, 7874 S.W. Nimbus Avenue, Beaverton, Oregon 97005

Energy Topics: glossary of energy terms

Types of Activities: none, but activity collections are also available from the above address

Approaches: comprehensive glossary

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is a well done, handy reference.

Title: Energy Insider (Newsletter)

Author: U.S. Department of Energy **Issue Date:** Bi-weekly

Suggested Grade Levels: adult

Suggested Subject Areas: general information

Media Types: newsletter

General Information

Cost: free

Source: DOE, Mail Stop, GA-343, Washington, DC 20585

Energy Topics: wide range of topics

Types of Activities: none

Approaches: provides information on current activities at the DOE and background information on various energy topics

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: Because it is written primarily for DOE employees, it will not be of interest to all teachers.

REFERENCE

Title: Energy Review (Newsletter)

Author: Minnesota Energy Agency: Communication Services **Issue Date:** Quarterly

Suggested Grade Levels: teacher use, also high school students

Suggested Subject Areas: interdisciplinary

Media Types: short magazine

Teacher Resource; General Information

Cost: Free

Source: Energy Review, Communications Services Division, Minnesota Energy Agency, 980 American Center Bldg., 150 E. Kellogg Blvd. St. Paul, MN 55101

Energy Topics: varies

Types of Activities: none

Approaches: short articles on different Minnesota energy issues.

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This is a well done source of news on energy.

Title: Minnesota Energy Agency Publications List (Bibliography)

Author: staff **Issue Date:** 1979

Suggested Grade Levels: K – 12; adult

Suggested Subject Areas: all subjects

Media Types: 2 page flyer

Teacher Resource

Cost: free

Source: Minnesota Energy Agency, Energy Information Center, 980 American Center Building, 150 E. Kellogg Blvd., St. Paul, MN 55101

Energy Topics: energy publications

Types of Activities: None

Approaches: listing of free publications available from the Mn. Energy Agency and other selected organizations

Student Outcomes: Clearly Stated? No

What Teacher Background is Assumed? none

Other/General Comments: This List is organized into categories such as education, agriculture, and solar.

ALPHABETICAL INDEX

This index combines activity, background and reference materials into one alphabetical listing in order to quickly locate specific materials by their titles. The section listing notes whether an item is in the Activities (A), Background (B), or Reference (R) section.

Accidents Will Happen: The Case Against Nuclear Power (B) 67
Acid Rain! Research Summary (B) 67
Alternative Sources of Energy (B) 68
Architecture and Energy (B) 68
At Home in the Sun (B) 69
Award Winning Energy Education Activities (A) 10
Basic Teaching Units (BTU's) on Energy (A) 10
The Best Present of All (B) 69
Black Sunshine: The Story of Coal (B) 70
Build Your Own Solar Water Heater (A) 11
Careers in the Energy Industry (B) 70
Catch the Wind: A Book of Windmills and Wind Power (B) 71
Chains, Webs, and Pyramids (B) 71
Classroom Energy House (A) 11
The Coming Age of Solar Energy (B) 72
Conservation of Energy (B) 72
Contract About the Energy Crisis (A) 12
Current Energy and Ecology (A) 12
A Curriculum Activities Guide to Electric Power Generation and the Environment (A) 13
Deciding How to Live on Spaceship Earth (A) 13
Discovering Coal (A) 14
Eco-Tips (B) 73
Elementary Energy Education (A) 14
Energetics: Nature's Energy Game (A) 15
The Energist (R) 106
Energy (A) 15
Energy (B) 73
Energy Activities and Coloring Book (A) 16
Energy Activities for the Classroom (A) 16
Energy Activities for Industrial Arts (A) 17
Energy Activities for Junior High Science (A) 17
Energy Activities for Junior High Social Studies (A) 18
Energy Activities with Energy Ant (A) 18
Energy All Around (A) 19
Energy Alternatives: Basic Science Inquiry Kit (A) 19
Energy and Conservation Education: Activities for the Classroom (A) 20
Energy and Ecology: A Newsbook (A) 20
Energy and Education (R) 106
Energy and Education: Teaching Alternatives (A) 21
Energy and Man's Environment (A) 21
Energy and My Environment (A) 22
Energy and Order (A) 22
Energy and Our Future (B) 74

Energy and Society: Investigations in Decision Making (A) 23
The Energy Balloon (B) 74
Energy Calendar (A) 23
The Energy Collector (R) 107
Energy Conservation (A) 24
Energy Conservation Activity Packet (A) 24
Energy/Consumerism: Home Economics (A) 25
The Energy Crisis (A) 25
The Energy Crisis (B) 75
The Energy Crisis: What are Our Choices (A) 26
The Energy Crisis: What You Can Do About It? (A) 26
The Energy Crunch Cookbook (A) 27
An Energy Curriculum for the Elementary Grades (A) 27
Energy Dilemmas (B) 75
Energy, Ecology, Economy (B) 76
Energy Education Bibliography (R) 107
Energy Education in Elementary Science (A) 28
Energy Education in Elementary Social Studies (A) 28
Energy Education in the Home: An Energy Education/Conservation Curriculum Guide for Home Economics Teachers (A) 29
Energy Education Materials (R) 108
Energy Education Materials Inventory (R) 108
Energy Education: The Mizer Series (A) 29
Energy Education Workshop Handbook (R) 109
Energy Environment Ethics Economics Curriculum Activity Guides (A) 30
Energy-Environment Source Book (B) 76
Energy, Food and You (A) 30
Energy for Today and Tomorrow (A) 31
Energy: From Source to Use (B) 77
Energy from the Sun (B) 77
Energy Futures (A) 31
Energy: A Glossary (R) 109
Energy Glossary (R) 110
Energy: A Growing National Problem (B) 78
Energy Insider (R) 110
Energy in the World of the Future (B) 78
Energy: Its Past, Its Present, Its Future (B) 79
Energy Kit (B) 79
Energy Learning Center (A) 32
Energy Management Game (A) 32
Energy Management Strategies for Colorado Home Economics Teachers (A) 33
Energy! Our Responsible Use of It (A) 33
Energy Options (B) 80
Energy Or Extinction? The Case for Nuclear Energy (B) 80
Energy Packet (A) 34
Energy: Past, Present, and Future (B) 81
Energy/Pollution (B) 81
Energy: Power for People (B) 82
Energy Primer (B) 82
Energy Resources: Past, Present and Future (B) 83
Energy: Science World Visuals 3 (A) 34
Energy: The Solar Prospect (World Paper II) (B) 83
The Energy Show (A) 35

Energy Sources/SCIIS (A) 35
Energy Review Newsletter (R) 111
Energy X (A) 36
The Environment: Activities and Explorations. Unit Six: Understanding Our Energy Needs (A) 36
Environmental Concerns: The Nation/Environmental Concerns: The World (A) 37
Environmental Education/Driver Education(A) 37
Experiments from Edison (A) 38
Everyday Conservation (A) 38
Exploring Alternative Energy Systems (A) 39
Exploring with Solar Energy (A) 39
Fact Sheets on Energy Technologies (B) 84
Facts About Oil (B) 84
Farm to Table: The Food – Energy Link (B) 85
Fuel Conservation Unit for Traffic Safety Education (I Love My Car) (A) 40
Get Your Hands on Energy: A Teaching Guide About Renewable Energy and Conservation (A) 40
Going, Going, Gone? The Waste of Our Energy Resources (B) 85
The Great Allegheny County Energy-Saver's Cookbook (A) 41
Handbook of Energy Lesson Plans (H.E.L.P.) (A) 41
Harnessing the Sun: The Story of Solar Energy (B) 86
Heating the Home with Wood (B) 86
Heatloss (A) 42
Home Sweet Earth; Project Ecology (A) 42
Household Energy (A) 43
The Household Energy Game (A) 43
How Did We Found Out About Nuclear Power? (B) 87
The Hydrocarbon Civilization (A) 44
Ideas and Activities for Teaching Energy Conservation (A) 44
Industrial Arts Manual to the Construction of Miniaturized Alternative Energy Source Equipment (A) 45
In Search of an Energy Policy (B) 87
Interdisciplinary Student/Teacher Materials in Energy, The Environment and The Economy (A) 45
Introduction to Energy (A) 46
An Introduction to Energy Sources (B) 88
It's Your Environment: Things to Think About – Things to do (A) 46
Kilowatt Counter (B) 88
Living with Energy (A) 47
Make Your Own Alternative Energy (A) 47
Minnesota Energy Activities for Elementary Students (A) 48
Minnesota Energy Agency Publications List (R) 111
Minnesota Energy Learning Modules/Industrial Arts (A) 48
Minnesota Energy Resource Units/Home Economics (A) 49
Minnesota Energy Resource Units/Science (A) 49
Minnesota Energy Resource Units/Social Studies (A) 50
Natural Gas Serves Our Community (A) 50
1980 Gas Mileage Guide (B) 89
Nuclear Energy (B) 89
Nuclear Power: From Physics to Politics (B) 90
Nuclear Power Plants (B) 90
Of Democracy, Truth, and Courage (A) 51
Oil (B) 91
Oil and Natural Gas (B) 91

Only Silly People Waste (B) 92
Pedal Power: In Work, Leisure, and Transportation (A) 51
The Powerline Protest! Short Stories in Law Education (A) 52
Practical Sun Power (A) 52
Price Changes in the Energy Marketplace (A) 53
Professional Energy Careers (B) 92
Putting the Sun to Work (A) 53
The Quest for Oil (B) 93
Rain Posters: Urban Ecotopia, Suburban Ecotopia (A) 54
Recycling Responds/Recycling Resources (B) 93
Recyclopedia (A) 54
Repairs, Reuse, Recycling – First Steps Toward a Sustainable Society (B) 94
Running On Empty! The Future of the Automobile in an Oil Short World (B) 94
Save Energy and Have Fun with Textiles (A) . . . . . 5[illegible]
Saving Electricity (B) 95
Science Activities in Energy (A) 55
The Solar Cookery Book: Everything Under the Sun (A) 56
Solar Energy (A) 56
Solar Energy (A) 57
Solar Energy Education Packet (A) 57
Solar Energy Experiments for Secondary School Students (A) 58
Solar Energy Projects (A) 58
The Solar Food Dryer Book (A) 59
The Solar Greenhouse Book (B) 95
The Solar Home Book: Heating, Cooling and Designing with the Sun (B) 96
Staples Energy Conservation Program (A) 59
Stepping Stones: Appropriate Technology and Beyond (B) 96
The Story of Natural Gas Energy (B) 97
The Story of Offshore Oil (B) 97
Sun! A Handbook for the Solar Decade (B) 98
Sun Power: Facts About Solar Energy (B) 98
Tapping the Earth's Heat (A) 60
Teaching About Energy Awareness: 33 Activities (A) 60
Teaching About Energy – How to Turn Them On (A) 61
Tilly's Ca[illegible] a Sunbeam Coloring Book (A) 61
Tips for Energy Savers (B) 99
Tips for the Motirist: Don't Be Fuelish (B) 99
Too Much Garbage (B) 100
200 Ways to Save on Energy in the Home and Still be Comfortable (B) 100
Underground Furnaces: The Story of Geothermal Energy (B) 101
Understanding Solar Energy Systems (A) 62
Wind, An Energy Alternative (B) 101
The Woodburner's Encyclopedia (B) 102